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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 6, 2003

Dr. Inés Triay, Manager
Carlsbad Field Office
Department of Energy
P.O. Box 3090
Carlsbad, New Mexico 88221-3090

Dr. Steven Warren, President
Washington TRU Solutions, LLC
P.O. Box 2078
Carlsbad, New Mexico 88221-5608

**RE: ADMINISTRATIVE COMPLETENESS DETERMINATION AND ISSUANCE OF REVISED
PERMIT
WIPP HAZARDOUS WASTE FACILITY PERMIT
EPA I.D. NUMBER NM4890139088**

Dear Dr. Triay and Dr. Warren:

The New Mexico Environment Department (NMED) acknowledges receipt of the following Notices of Class 1 Modifications to the WIPP Hazardous Waste Facility Permit as submitted to the Hazardous Waste Bureau (HWB):

- Notification of Class 1 Permit Modifications (Corporate Name Change), Letter Dated 12/27/02, Rec'd 1/2/03
- Notification of Class 1 Permit Modifications (WTS President Name Change), Letter Dated 1/21/03, Rec'd 1/23/03
- Notification of Class 1 Permit Modifications (Fire Alarm), Letter Dated 1/27/03, Rec'd 1/28/03

NMED has reviewed these documents and determined that they are administratively complete. All modifications identified in the Notices of Class 1 Modification listed above have been put into effect as requested by the Permittees under the conditions specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.42(a)(1)).

030212



The New Mexico Hazardous Waste Fee Regulations require assessment of fees when administrative review of a document is complete, as specified in 20.4.2.301 NMAC. NMED will issue an invoice to you under a separate letter. Payment is due within sixty (60) calendar days from the date that you receive the invoice.

NMED has issued a revised version of the Permit to reflect all modifications approved to date. These modifications include following:

- Drum Age Criteria Class 3 Permit Modification (Public Hearing No. HWB 02-01(M)), approved by Final Order of the NMED Secretary on December 31, 2002
- "Closure Schedule Change" Class 1* Permit Modification, approved by NMED on December 26, 2002
- The Class 1 modifications noted above, received between January 2 and January 28, 2003

The approved modifications are incorporated in Attachment 1, which contains the redline/strikeout pages of the modified permit to help the reader rapidly identify each modification. Language deleted from the permit is ~~stricken out~~. Language added to the permit is highlighted in redline. For purposes of version control, NMED has established the date of these modified pages and attachments as January 30, 2003.

Also enclosed is a CD-ROM containing the modified files in WordPerfect 8 redline/strikeout format as well as files with markings and comments removed. An electronic version of the modified permit with markings removed was publicly posted on the NMED WIPP Information Page at <http://www.nmenv.state.nm.us/wipp/download.html> and has been available for download since January 30, 2003, in conformance with the NMED Secretary's Final Order dated December 31, 2002.

NMED will provide full response to all public comments on the DAC modification under separate cover.

If you have any questions regarding this matter, please contact Steve Zappe at (505) 428-2517.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

JPB:soz

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Dr. Triay and Dr. Warren

February 6, 2003

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Attachments – redline/strikeout pages
CD ROM with electronic files

cc w/o Attachments:

Charles Lundstrom, NMED

John Kieling, NMED HWB

Steve Zappe, NMED HWB

Cindy Abeyta, NMED HWB

Laurie King, EPA Region 6

Betsy Forinash, EPA ORIA

cc w/ Attachments

Chuck Noble, NMED OGC

Connie Walker, Trinity Engineering

File: Red WIPP '03

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ATTACHMENT A

GENERAL FACILITY DESCRIPTION AND PROCESS INFORMATION

A-1 Facility Description

Abstract

NAME OF FACILITY: Waste Isolation Pilot Plant

OWNER and CO-OPERATOR: U.S. Department of Energy
P.O. Box 3090
Carlsbad, NM 88221

CO-OPERATOR: ~~Westinghouse~~ Washington TRU Solutions LLC
P.O. Box 2078
Carlsbad, NM 88221

RESPONSIBLE OFFICIALS: Inés Triay, Manager
DOE/Carlsbad Field Office
~~John Lee, General Manager~~ Dr. Steven Warren,
President
~~Westinghouse~~ Washington TRU Solutions
LLC

FACILITY MAILING ADDRESS: U.S. Department of Energy
P.O. Box 3090
Carlsbad, NM 88221

FACILITY LOCATION: 30 miles east of Carlsbad on the Jal Highway, in
Eddy County.

TELEPHONE NUMBER: 505/234-7300

U.S. EPA I.D. NUMBER: NM4890139088

GEOGRAPHIC LOCATION: 32° 22' 30" N
103° 47' 30" W

DATE OPERATIONS BEGAN: November 26, 1999

- 1 • The waste stream or waste stream lot must consist of more than 10 containers.
- 2 • The waste stream must be a homogeneous solid or soil/gravel waste stream that
- 3 has no VOC-related hazardous waste codes assigned to it.
- 4 • The results of the solid sampling and analysis must confirm that no VOC-related
- 5 hazardous waste codes should be assigned to the waste stream.

6 If a waste stream meets these conditions for reduced headspace gas sampling,
7 generator/storage sites may choose to randomly select containers for headspace gas sampling
8 and analysis using the statistical approach in Permit Attachment B2, Section B2-2b.

9 B-3a(1)(ii) Reduced Sampling Requirements for Thermally Treated Waste Streams

10 Headspace gas sampling of homogeneous solid and soil/gravel wastes that have undergone
11 high-temperature thermal processes may qualify for reduced headspace sampling if they meet
12 the following criteria:

- 13 • The waste stream or waste stream lot must consist of more than 10 containers.
- 14 • The waste stream must have either been generated using a high-temperature
- 15 thermal process or been subjected to a high-temperature thermal process after
- 16 generation that resulted in the reduction of matrix-related VOCs in the
- 17 headspace to concentrations below the PRQLs in Permit Attachment B3, Table
- 18 B3-2.
- 19 • The site must have documentation demonstrating that high-temperature thermal
- 20 processes were used.

21 If a waste stream meets these conditions for reduced headspace gas sampling,
22 generator/storage sites may choose to randomly select containers for headspace gas sampling
23 and analysis using the statistical approach in Permit Attachment B2, Section B2-2b.

24 B-3a(2) Homogeneous Waste Sampling and Analysis

25 Sampling of homogeneous and soil/gravel wastes shall result in the collection of a sample that
26 is used to confirm hazardous waste code assignment by acceptable knowledge. Sampling is
27 accomplished through core or other EPA approved sampling, which is described in Permit
28 Attachment B1. For those waste streams defined as Summary Category Groups S3000 or
29 S4000 on page B-3, debris that may also be present within these wastes need not be sampled.
30 The waste containers for sampling and analysis are to be selected randomly from the
31 population of containers for the waste stream. The random selection methodology is specified
32 in Permit Attachment B2.

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waste being packaged. If a confirmation cannot be made, corrective actions² will be taken as specified in Permit Attachment B3. Instead of using a video/audio tape as required with VE in support of radiography in Attachment B1-3b(3), the VE technique for newly generated waste (or repackaged retrievably stored waste) uses a second operator, who is equally trained to the requirements stipulated in Permit Attachment B1, to provide additional verification by reviewing the contents of the waste container to ensure correct reporting. If the second operator cannot provide concurrence, corrective actions will be taken as specified in Permit Attachment B3. The subsequent waste characterization activities depend on the assigned Summary Category Group, since waste within the Homogeneous Solids and Soils/Gravel Summary Category Groups will be characterized using different techniques than the waste in the Debris Waste Summary Category Group. The packaging configuration, type and number of filters, and rigid liner vent hole presence and diameter necessary to determine the appropriate drum age criteria (DAC) in accordance with Permit Attachment B1, Section B1-1, shall be documented as part of the characterization information collected during the packaging of newly generated waste or repackaging of retrievably stored waste process. This characterization information does not require subsequent verification. If retrievably stored waste is characterized in the same manner as newly generated waste due to unacceptable AK (see Section B-1a), the option to perform radiography in lieu of or in combination with the VE technique does not apply.

All containers of newly generated waste or newly generated waste containers randomly selected from waste streams that meet the conditions for reduced headspace gas sampling listed in Section B-3a(1) will undergo headspace-gas analysis for VOC concentrations prior to shipment. If the Permittees believe the frequency can be reduced in the future based on trends in analytical results, they may provide technical arguments for such a reduction and request a permit modification from NMED. The headspace-gas sampling method is provided in Permit Attachment B1. Headspace gas data will be used to confirm acceptable knowledge waste characterization, as specified in Permit Attachment B4.

B-3d(1)(a) Sampling of Newly Generated Homogeneous Solids

Newly generated mixed waste streams of homogeneous solids will be randomly sampled a minimum of once per year for total PCBs, VOCs, SVOCs and metals. An initial ten-sample set, however, will be collected to develop the baseline control chart. Sampling frequency of once per year is only allowed if a process has operated within procedurally established bounds without any process changes or fluctuations which would result in either a new waste stream or the identification of a new hazardous waste constituent in that waste stream. Otherwise, the waste shall be considered as process batches and each batch will undergo sampling and analysis. Process changes and process fluctuations will be determined using statistical process control charting techniques; these techniques require the ten-sample baseline and historical data for determining limits for indicator species and subsequent periodic sampling to assess process behavior relative to historical limits. If the limits are exceeded, the waste stream shall be

² "Corrective action" as used in this WAP and its attachments does not mean corrective action as defined under HWA, RCRA, and their implementing regulations.

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1 S3000 waste stream or waste stream lot is the number of samples determined in accordance
2 with Section B2-2a. Radiographic results will be compared to acceptable knowledge results to
3 ensure correct Waste Matrix Code assignment and identification of prohibited items. If
4 radiographic analysis do not confirm the physical waste form, waste will be reassigned as
5 specified in Section B-3c. Generator/storage sites may elect to substitute visual examination for
6 radiographic analysis.

7 To confirm the results of radiography, a statistically selected number of the TRU mixed waste
8 container population will be visually examined by opening containers to inspect waste contents
9 to verify radiography results. Permit Attachment B2 contains the approach used to statistically
10 select the number of drums to be visually examined. For homogeneous waste and soils/gravels
11 selected for sampling, the containers opened for sampling may be used to help fulfill the visual
12 examination requirements.

13 All retrievably stored containers or retrievably stored containers randomly selected from waste
14 streams that meet the conditions for reduced headspace gas sampling listed in Section B-3a(1)
15 will undergo headspace gas analysis for VOC concentrations. Retrievably stored waste that is
16 repackaged will be subject to the DAC determination specified in Section B-3d(1). The
17 headspace gas sampling method is provided in Permit Attachment B1. All headspace gas data
18 will be used to confirm acceptable knowledge waste characterization, as specified in Permit
19 Attachment B4.

20 A statistically selected portion of retrievably stored homogeneous solids and soil/gravel wastes
21 will be sampled and analyzed for total VOCs, SVOCs, and metals. The approach used to
22 statistically select drums for homogeneous solids and soil/gravel wastes is different than the
23 method used to select waste containers for visual examination. This method is also included in
24 Permit Attachment B2. The sampling methods for these wastes are provided in Permit
25 Attachment B1.

26 The toxicity characteristic of retrievably stored homogeneous solids and soil/gravel wastes will
27 be determined using total analysis of toxicity characteristic parameters or TCLP. To determine if
28 a waste exhibits a toxicity characteristic for compounds specified in 20.4.1.200 NMAC
29 (incorporating 40 CFR §261, Subpart C), TCLP may be used instead of total analyses.
30 Appendix C3 of the WIPP RCRA Part B Permit Application (DOE, 1997) discusses
31 comparability of totals analytical results to those of the TCLP method.

32 Representativeness of containers selected for visual examination and waste subjected to
33 homogeneous solids and soil/gravel sampling and analysis will be validated by the
34 generator/storage site and by the Permittees during an audit (Permit Attachment B6) via
35 examination of documentation that shows that true random samples were collected. (Because
36 representativeness is a quality characteristic that expresses the degree to which a sample or
37 group of samples represent the population being studied, the random sampling of waste
38 streams ensures representativeness.)

TABLE B-8
WIPP WASTE INFORMATION SYSTEM DATA FIELDS^a

Characterization Module Data Fields ^b	
Container ID ^c	Total VOC Sample Date
Generator EPA ID	Total VOC Analysis Date
Generator Address	Total VOC Analyte Name ^d
Generator Name	Total VOC Analyte Concentration ^d
Generator Contact	Total Metal Sample Date
Hazardous Code	Total Metal Analysis Date
Headspace Gas Sample Date	Total Metal Analyte Name ^d
Headspace Gas Analysis Date	Total Metal Analyte Concentration ^d
Layers of Packaging (i.e., confinement)	Semi-VOC Sample Date
Liner Exists	Semi-VOC Analysis Date
Drum-Liner Hole Size	Semi-VOC Analyte Name ^d
Filter Model	Semi-VOC Concentration ^d
Number of Filters Installed	Transporter EPA ID
Headspace Gas Analyte ^d	Transporter Name
Headspace Gas Concentration ^d	Visual Exam Container ^e
Headspace Gas Char. Method ^d	Waste Material Parameter ^d
Total VOC Char. Method ^d	Waste Material Weight ^d
Total Metals Char. Method ^d	Waste Matrix Code
Total Semi-VOC Char. Method ^d	Waste Matrix Code Group
Item Description Code	Waste Stream Profile Number
Haz. Manifest Number	
NDE Complete ^e	
PCB Concentration	
Certification Module Data Fields	
Container ID ^c	Handling Code
Container type	
Container Weight	
Contact Dose Rate	
Container Certification date	
Container Closure Date	
Transportation Data Module	
Contact Handled Package Number	Ship Date
Assembly Number ^f	Receive Date
Container IDs ^{g,d}	
ICV Closure Date	

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ATTACHMENT B1

WASTE CHARACTERIZATION SAMPLING METHODS

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ATTACHMENT B1

WASTE CHARACTERIZATION SAMPLING METHODS

Introduction

The Permittees will require generator/storage sites (**sites**) to use the following methods for characterization of TRU mixed waste which is managed, stored, or disposed at WIPP. These methods include requirements for headspace-gas sampling, sampling of homogenous solids and soils/gravel, and radiography. Additionally, this Attachment provides quality control, sample custody, and sample packing and shipping requirements.

B1-1 Headspace-Gas Sampling

B1-1a Method Requirements

The Permittees shall require all headspace-gas sampling be performed in an appropriate radiation containment area on waste containers that are in compliance with the container equilibrium requirements (i.e. 72 hours at 18° C or higher).

B1-1a(1) Summary Category S5000 Requirements

All waste containers or randomly selected containers from waste streams that meet the conditions for reduced headspace gas sampling listed in Permit Attachment B, Section B-3a(1), designated as summary category S5000 (Debris waste) shall be categorized under one of the sampling scenarios shown in Table B1-5 and depicted in Figure B1-1. If the container is categorized under Scenario 1, the applicable drum age criteria (**DAC**) from Table B1-6 must be met prior to headspace gas sampling. If the container is categorized under Scenario 2, the applicable Scenario 1 DAC from Table B1-6 must be met prior to venting the container and then the applicable Scenario 2 DAC from Table B1-7 must be met after venting the container. The DAC for Scenario 2 containers that contain filters or rigid liner vent holes other than those listed in Table B1-7 shall be determined using footnotes "a" and "b" in Table B1-7. Containers that have not met the Scenario 1 DAC at the time of venting must be categorized under Scenario 3. Containers categorized under Scenario 3 must be placed into one of the Packaging Configuration Groups listed in Table B1-8. If a specific packaging configuration cannot be assigned determined based on the data collected during characterization and confirmation packaging (~~Attachment B, Section B-3(d)4~~) and/or repackaging (Attachment B, Section B-3(d)1), a conservative default Packaging Configuration Group of 3 for drums and 6 for Standard Waste Boxes (**SWBs**) must be assigned, provided the drums and ~~SWBs~~ do not contain pipe component packaging. If a container is designated as Packaging Configuration Group 4 (i.e., a pipe component), the headspace gas sample must be taken from the pipe component headspace. The DAC for Scenario 3 containers that contain filters or rigid liner vent holes that

are either undocumented or are other than those listed in Table B1-9 during packaging (Attachment B, Section B-3(d)1), repackaging (Attachment B, Section B-3(d)1), and/or venting (Section B1-1a[6][ii]) shall be determined using the default conditions in footnotes "a" and "b" in Table B1-9. The DAC for Scenario 3 containers that contain filters that are either undocumented or are other than those listed in Table B1-9 shall be determined using footnote 'a' in Table B1-9. Each of the Scenario 3 containers shall be sampled for headspace gas after waiting the DAC in Table B1-9 based on its packaging configuration (note: Packaging Configuration Groups 4, 5, and 6 are not summary category group dependent, and SWB requirements apply when the SWB itself is used for the direct loading of waste) ~~sampled for headspace gas a minimum of 142 days after packaging.~~

B1-1a(2) Summary Category S3000/S4000 Requirements

All waste containers or randomly selected containers from waste streams that meet the conditions for reduced headspace gas sampling listed in Permit Attachment B, Section B-3a(1), designated as summary categories S3000 (Homogenous solids) and S4000 (Soil/gravel) shall be categorized under one of the sampling scenarios shown in Table B1-5 and depicted in Figure B1-1. If the container is categorized under Scenario 1, the applicable DAC from Table B1-6 must be met prior to headspace gas sampling. If the container is categorized under Scenario 2, the applicable Scenario 1 DAC from Table B1-6 must be met prior to venting the container and then the applicable Scenario 2 DAC from Table B1-7 must be met after venting the container. The DAC for Scenario 2 containers that contain filters or rigid liner vent holes other than those listed in Table B1-7 shall be determined using footnotes "a" and "b" in Table B1-7. Containers that have not met the Scenario 1 DAC at the time of venting must be categorized under Scenario 3. Containers categorized under Scenario 3 must be placed into one of the Packaging Configuration Groups listed in Table B1-8. If a specific packaging configuration cannot be assigned determined based on the data collected during ~~characterization and confirmation packaging (Attachment B, Section B-3(d)1) and/or repackaging (Attachment B, Section B-3(d)1),~~ a conservative default Packaging Configuration Group of 3 for drums and 6 for SWBs must be assigned, provided the drums and SWBs do not contain pipe component packaging. If a container is designated as Packaging Configuration Group 4 (i.e., a pipe component), the headspace gas sample must be taken from the pipe component headspace. The DAC for Scenario 3 containers that contain filters or rigid liner vent holes that are undocumented or are other than those listed in Table B1-10 during packaging (Attachment B, Section B-3(d)1), repackaging (Attachment B, Section B-3(d)1), and/or venting (Section B1-1a[6][ii]) shall be determined using the default conditions in footnotes "a" and "b" in Table B1-10. The DAC for Scenario 3 containers that contain filters that are either undocumented or are other than those listed in Table B1-10 shall be determined using footnote 'a' in Table B1-10. Each of the Scenario 3 containers shall be sampled after waiting the DAC in Table B1-10 based on its packaging configuration (note: Packaging Configuration Groups 4, 5, and 6 are not summary category group dependent, and SWB requirements apply when the SWB itself is used for the direct loading of waste) ~~sampled a minimum of 225 days after packaging.~~

1 B1-1a(3) General Requirements

2 The determination of packaging configuration consists of identifying the number of confinement
3 layers and the identification of rigid poly liners when present. Generator/storage sites shall use
4 radiography and/or visual examination in conjunction with acceptable knowledge (procedural
5 controls, etc.) to determine and/or verify the appropriate sampling scenario and packaging
6 configuration either the default conditions specified in Tables B1-7 through B1-10 for retrievably
7 stored waste or the data documented during packaging (Attachment B, Section B-3(d)1),
8 repackaging (Attachment B, Section B-3(d)1), and/or venting (Section B1-1a[6][ii]) for
9 determining the appropriate DAC for each container from which a headspace gas sample is
10 collected. These ~~This drum age criteria are is to ensure that the drum~~ container contents have
11 reached 90 percent of steady state concentration within each layer of confinement (Lockheed,
12 1995; BWXT, 2000). The following information must be reported in the headspace gas sampling
13 documents for each container from which a headspace gas sample is collected:

- 14 • sampling scenario from Table B1-5 and associated information from Tables B1-6 and/or
15 Table B1-7;
- 16 • the packaging configuration from Table B1-8 and associated information from Tables
17 B1-9 or B1-10, including the diameter of the rigid liner vent hole, the number of inner
18 bags, the number of liner bags, the presence/absence of drum liner, and the filter
19 hydrogen diffusivity,
- 20 • the permit-required equilibrium time, and
- 21 • the drum age ~~of all containers from which a headspace gas sample is collected will be~~
22 ~~documented in headspace gas sampling documents.~~

23 For all retrievably stored waste containers, the rigid liner vent hole diameter must be assumed
24 to be 0.3 inches unless a different size is documented during drum venting or repackaging. For
25 all retrievably stored waste containers, the filter hydrogen diffusivity must be assumed to be the
26 most restrictive unless container-specific information clearly identifies a filter model and/or
27 diffusivity characteristic that is less restrictive. For all retrievably stored waste containers that
28 have not been repackaged, acceptable knowledge shall not be used to justify any packaging
29 configuration less conservative than the default (i.e., Packaging Configuration Group 3 for
30 drums and 6 for SWBs). For information reporting purposes listed above, sites may report the
31 default packaging configuration for retrievably stored waste without further confirmation.

32 All waste containers with unvented rigid containers greater than 4 liters (exclusive of rigid poly
33 container liners) shall be subject to innermost layer of containment sampling or shall be vented
34 prior to initiating drum age and equilibrium criteria. When sampling the rigid poly-drum liner
35 under Scenario 1, the sampling device must form an airtight seal with the rigid poly-drum liner to
36 ensure that a representative sample is collected (using a sampling needle connected to the
37 sampling head to pierce the rigid poly-drum liner, and that allows for the collection of a
38 representative sample, satisfies this requirement). The configuration of the containment area
39 and remote-handling equipment at each sampling facility are expected to differ. Headspace-gas
40 samples will be analyzed for the analytes listed in Table B3-2 of Permit Attachment B3. If
41 additional packaging configurations are identified, an appropriate Permit Modification will be

submitted to incorporate the DAC using the methodology in BWXT (2000). Consistent with footnote "a" in Table B1-8, any waste container that cannot be assigned a packaging configuration specified in Table B1-8 shall not be shipped to or accepted for disposal at WIPP.

Drum age criteria apply only to 55-gallon drums and standard waste boxes. Drum age criteria for all other container types must be established through permit modification prior to acceptance of these containers at WIPP.

The Permittees shall require site personnel to collect samples in SUMMA® or equivalent canisters using standard headspace-gas sampling methods that meet the general guidelines established by the U.S. Environmental Protection Agency (EPA) in the Compendium Method TO-14, Redetermination of Volatile Organic Compounds (VOC) in Ambient Air using Summa Passivated Canister Sampling and Gas Chromatography Analysis (EPA 1988) or by using on-line integrated sampling/analysis systems. Samples will be directed to an analytical instrument instead of being collected in SUMMA® or equivalent canisters if a single-sample on-line integrated sampling/analysis system is used. If a multi-sample on-line integrated sampling/analysis system is used, samples will be directed to an integrated holding area that meets the cleaning requirements of Section B1-1c(1). The leak proof and inert nature of the integrated holding area interior surface must be demonstrated and documented. Samples are not transported to another location when using on-line integrated sampling/analysis systems; therefore, the sample custody requirements of Section B1-4 and B1-5 do not apply. The same sampling manifold and sampling heads are used with on-line integrated sampling/analysis systems and all of the requirements associated with sampling manifolds and sampling heads must be met. However, when using an on-line integrated sampling/analysis system, the sampling batch and analytical batch quality control (QC) samples are combined as on-line batch QC samples as outlined in Section B1-1b.

B1-1a(44) Manifold Headspace Gas Sampling

This headspace-gas sampling protocol employs a multiport manifold capable of collecting multiple simultaneous headspace samples for analysis and QC purposes. The manifold can be used to collect samples in SUMMA® or equivalent canisters or as part of an on-line integrated sampling/analysis system. The sampling equipment will be leak checked and cleaned prior to first use and as needed thereafter. The manifold and sample canisters will be evacuated to 0.0039 inches (in.) (0.10 millimeters [mm]) mercury (Hg) prior to sample collection. Cleaned and evacuated sample canisters will be attached to the evacuated manifold before the manifold inlet valve is opened. The manifold inlet valve will be attached to a changeable filter connected to either a side port needle sampling head capable of forming an airtight seal (for penetrating a filter or rigid poly liner when necessary), a drum punch sampling head capable of forming an airtight seal (capable of punching through the metal lid of a drum while maintaining an airtight seal for sampling through the drum lid), or a sampling head with an airtight seal fitting for sampling through a pipe overpack container filter vent hole. Refer to Section B1-1a(36) for descriptions of these sampling heads.

1 The manifold shall also be equipped with a purge assembly that allows applicable QC samples
2 to be collected through all sampling components that may affect compliance with the QAO's.
3 The Permittees shall require the sites to demonstrate and document the effectiveness of the
4 sampling equipment design in meeting the QAOs. Field blanks shall be samples of room air
5 collected in the sampling area in the immediate vicinity of the waste container to be sampled. If
6 using SUMMA® or equivalent canisters, field blanks shall be collected directly into the canister,
7 without the use of the manifold.

8 The manifold, the associated sampling heads, and the headspace-gas sample volume
9 requirements shall be designed to ensure that a representative sample is collected. The
10 manifold internal volume must be calculated and documented in a field logbook dedicated to
11 headspace-gas sample collection. The total volume of headspace gases collected during each
12 sampling operation will be determined by adding the combined volume of the canisters attached
13 to the manifold and the internal volume of the manifold. The sample volume should remain
14 small in comparison to the volume of the waste container. When an estimate of the available
15 headspace gas volume in the drum can be made, less than 10 percent of that volume should be
16 withdrawn.

17 As illustrated in Figure B1-42, the sampling manifold must consist of a sample side and a
18 standard side. The dotted line in Figure B1-42 indicates how the sample side shall be
19 connected to the standard side for cleaning and collecting equipment blanks and field reference
20 standards. The sample side of the sampling manifold shall consist of the following major
21 components:

- 22 • An applicable sampling head that forms a leak-tight connection with the
23 headspace sampling manifold.
- 24 • A flexible hose that allows movement of the sampling head from the purge
25 assembly (standard side) to the waste container.
- 26 • A pressure sensor(s) that must be pneumatically connected to the manifold. This
27 manifold pressure sensor(s) must be able to measure absolute pressure in the
28 range from 0.002 in. (0.05 mm) Hg to 39.3 in. (1,000 mm) Hg. Resolution for the
29 manifold pressure sensors must be ± 0.0004 in. (0.01 mm) Hg at 0.002 in. (0.05
30 mm) of Hg. The manifold pressure sensor(s) must have an operating range from
31 approximately 59°F (15°C) to 104°F (40°C).
- 32 • Available ports for attaching sample canisters. If using canister-based sampling
33 methods, a sufficient number of ports shall be available to allow simultaneous
34 collection of headspace-gas samples and duplicates for VOC analyses. If using
35 an on-line integrated sampling/analysis system, only one port is necessary for
36 the collection of comparison samples. Ports not occupied with sample canisters
37 during cleaning or headspace-gas sampling activities require a plug to prevent
38 ambient air from entering the system. In place of using plugs, sites may choose
39 to install valves that can be closed to prevent intrusion of ambient air into the

manifold. Ports shall have VCR® fittings for connection to the sample canister(s) to prevent degradation of the fittings on the canisters and manifold.

- Sample canisters, as illustrated in Figure B1-23, are leak-free, stainless steel pressure vessels, with a chromium-nickel oxide (Cr-NiO) SUMMA®-passivated interior surface, bellows valve, and a pressure/vacuum gauge. Equivalent designs, such as Silco Steel canisters, may be used so long as the leak proof and inert nature of the canister interior surface is demonstrated and documented. All sample canisters must have VCR® fittings for connection to sampling and analytical equipment. The pressure/vacuum gauge must be mounted on each manifold. The canister must be helium-leak tested to 1.5×10^{-7} standard cubic centimeters per second (cc/s), have all stainless steel construction, and be capable of tolerating temperatures to 125°C. The gauge range shall be capable of operating in the leak test range as well as the sample collection range.

- A dry vacuum pump with the ability to reduce the pressure in the manifold to 0.05 mm Hg. A vacuum pump that requires oil may be used, but precautions must be taken to prevent diffusion of oil vapors back to the manifold. Precautions may include the use of a molecular sieve and a cryogenic trap in series between the headspace sampling ports and the pump.

- A minimum distance, based upon the design of the manifold system, between the tip of the needle and the valve that isolates the pump from the manifold in order to minimize the dead volume in the manifold.

- If real-time equipment blanks are not available, the manifold must be equipped with an organic vapor analyzer (OVA) that is capable of detecting all analytes listed in Table B3-2 of Permit Attachment B3. The OVA shall be capable of measuring total VOC concentrations below the lowest headspace gas PRQL. Detection of 1,1,2-trichloro-1,2,2-trifluoroethane may not be possible if a photoionization detector is used. The OVA measurement shall be confirmed by the collection of equipment blanks at the frequency specified in Section B1-1 to check for manifold cleanliness.

The standard side must consist of the following major elements:

- A cylinder of compressed zero air, helium, argon, or nitrogen gas that is hydrocarbon and carbon dioxide (CO₂)-free (only hydrocarbon and CO₂-free gases required for Fourier Transform Infrared System [FTIRS]) to clean the manifold between samples and to provide gas for the collection of equipment blanks or on-line blanks. These high-purity gases shall be certified by the manufacturer to contain less than one ppm total VOCs. The gases must be metered into the standard side of the manifold using devices that are corrosion

In addition to a manifold consisting of a sample side and a standard side, the area in which the manifold is operated shall contain sensors for measuring ambient pressure and ambient temperature, as follows:

- The ambient-pressure sensor must have a sufficient measurement range for the ambient barometric pressures expected at the sampling location. It must be kept in the sampling area during sampling operations. Its resolution shall be 0.039 in. (1.0 mm) Hg or less, and calibration performed by the manufacturer shall be based on National Institute of Standards and Technology (NIST), or equivalent, standards.
- The temperature sensor shall have a sufficient measurement range for the ambient temperatures expected at the sampling location. The measurement range of the temperature sensor must be from 18°C to 50°C. The temperature sensor calibration shall be traceable to NIST, or equivalent, standards.

B1-1a(25) Direct Canister Headspace Gas Sampling

This headspace-gas sampling protocol employs a canister-sampling system to collect headspace-gas samples for analysis and QC purposes without the use of the manifold described above. Rather than attaching sampling heads to a manifold, in this method the sampling heads are attached directly to an evacuated sample canister as shown in Figure B1-34.

Canisters shall be evacuated to 0.0039 in. (0.10 mm) Hg prior to use and attached to a changeable filter connected to the appropriate sampling head. The sampling head(s) must be capable of either punching through the metal lid of the drums (and/or the rigid poly liner when necessary) while maintaining an airtight seal for when sampling through the drum lid, penetrating a filter or the septum in the orifice of the self-tapping screw, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole to obtain the drum headspace samples. Field duplicates must be collected at the same time, in the same manner, and using the same type of sampling apparatus as used for headspace-gas sample collection. Field blanks shall be samples of room air collected in the immediate vicinity of the waste-drum sampling area prior to removal of the drum lid. Equipment blanks and field-reference standards must be collected using a purge assembly equivalent to the standard side of the manifold described above. These samples shall be collected from the needle tip through the same components (e.g., needle and filter) that the headspace-gas samples pass through.

The sample canisters, associated sampling heads, and the headspace-sample volume requirements ensure that a representative sample is collected. When an estimate of the available headspace-gas volume of the waste container can be made, less than 10 percent of that volume should be withdrawn. A determination of the sampling head internal volume shall be made and documented. The total volume of headspace gases collected during each headspace gas sampling operation can be determined by adding the volume of the sample

canister(s) attached to the sampling head to the internal volume of the sampling head. Every effort shall be made to minimize the internal volume of sampling heads.

Each sample canister used with the direct canister method shall have a pressure/vacuum gauge capable of indicating leaks and sample collection volumes. Canister gauges are intended to be gross leak-detection devices not vacuum-certification devices. If a canister pressure/vacuum gauge indicates an unexpected pressure change, determination of whether the change is a result of ambient temperature and pressure differences or a canister leak shall be made. This gauge shall be helium-leak tested to 1.5×10^{-7} standard cc/s, have all stainless steel construction, and be capable of tolerating temperatures to 125°C.

The SUMMA® or equivalent sample canisters as specified in EPA's Compendium Method TO-14 (EPA 1988) shall be used when sampling each drum. These heads shall form a leak-tight connection with the canister and allow sampling through the drum-lid filter, through the drum lid itself and/or rigid poly liner when necessary (by use of a punch or self-tapping screw), or using an airtight seal fitting to collect the sample through the filter vent hole of a pipe overpack container, or using a hollow side port needle. Figure B1-34 illustrates the direct canister-sampling equipment.

B1-1a(36) Sampling Heads

A sample of the headspace gas directly under the drum container lid, pipe overpack filter vent hole, or rigid poly liner shall be collected ~~from within the drum. Three~~ Several methods have been developed for collecting a representative sample: sampling through the filter, sampling through the drum lid by drum punching, and sampling through a pipe overpack container filter vent hole, and sampling through the rigid poly liner ~~have been developed for collecting a representative sample.~~ The chosen sampling method shall preserve the integrity of the drum to contain radionuclides (e.g., replace the damaged filter, replace set screw in filter housing, seal the punched drum lid).

B1-1a(36)(i) Sampling Through the Filter

To sample the drum-headspace gas through the drum's filter, a side-port needle (e.g., a hollow needle sealed at the tip with a small opening on its side close to the tip) shall be pressed through the filter and into the headspace beneath the drum lid. This permits the gas to be drawn into the manifold or directly into the canister(s). To assure that the sample collected is representative, all of the general method requirements, sampling apparatus requirements, and QC requirements described in this section shall be met in addition to the following requirements that are pertinent to drum headspace-gas sampling through the filter:

- The lid of the drum's 90-mil rigid poly liner shall contain a hole for venting to the drum headspace. A representative sample cannot be collected from the drum headspace until the 90-mil rigid poly- liner has been vented ~~to the drum.~~ If the DAC for Scenario 1 is met, a sample may be collected from inside the 90-mil rigid poly liner. If the sample is collected by removing the drum lid, the sampling

device shall form an airtight seal with the rigid poly liner to prevent the intrusion of outside air into the sample (using a sampling needle connected to the sampling head to pierce the rigid-drum poly liner satisfies this requirement). If headspace-gas samples are collected from the drum headspace prior to venting the 90-mil rigid poly liner, the sample is not acceptable and a nonconformance report shall be prepared, submitted, and resolved. Nonconformance procedures are outlined in Permit Attachment B3.

- For sample collection, the drum's filter shall be sealed to prevent outside air from entering the drum and diluting and/or contaminating the sample.

The sampling head for collecting drum headspace by penetrating the filter shall consist of a side-port needle, a filter to prevent particles from contaminating the gas sample, and an adapter to connect the side-port needle to the filter. To prevent cross contamination, the sampling head shall be cleaned or replaced after sample collection, after field-reference standard collection, and after field-blank collection. The following requirements shall also be met:

- The housing of the filter shall allow insertion of the sampling needle through the filter element or a sampling port with septum that bypasses the filter element into the drum headspace.
- The side-port needle shall be used to reduce the potential for plugging.
- The purge assembly shall be modified for compatibility with the side-port needle.

B1-1a(36)(ii) Sampling Through the Drum Lid By Drum Lid Punching

Sampling through the drum lid at the time of drum punching or thereafter may be performed as an alternative to sampling through the drum's filter if an airtight seal can be maintained. To sample the drum headspace-gas through the drum lid at the time of drum punching or thereafter, the lid shall be breached using an appropriate punch. The punch shall form an airtight seal between the drum lid and the manifold or direct canister sampling equipment. To assure that the sample collected is representative, all of the general method requirements, sampling apparatus requirements, and QC requirements specified in EPA's Compendium Method TO-14 (EPA 1988) as appropriate, shall be met in addition to the following requirements:

- The seal between the drum lid and sampling head shall be designed to minimize intrusion of ambient air.
- All components of the sampling system that come into contact with sample gases shall be purged with humidified zero air, nitrogen, or helium prior to sample collection.

- Equipment blanks and field reference standards shall be collected through all the components of the punch that contact the headspace-gas sample.
- Pressure shall be applied to the punch until the drum lid has been breached.
- Provisions shall be made to relieve excessive drum pressure increases during drum-punch operations; potential pressure increases may occur during sealing of the drum punch to the drum lid.
- The lid of the drum's 90-mil rigid poly liner shall contain a hole for venting to the drum headspace. A representative sample cannot be collected from the drum headspace until the 90-mil rigid poly- liner has been vented to the drum. If the DAC for Scenario 1 is met, a sample may be collected from inside the 90-mil rigid poly liner-drum liner. If headspace-gas samples are collected from the drum headspace prior to venting the 90-mil rigid poly liner, the sample is not acceptable and a nonconformance report shall be prepared, submitted, and resolved. Nonconformance procedures are outlined in Permit Attachment B3.
- During sampling, the drum's filter, if present, shall be sealed to prevent outside air from entering the drum.
- While sampling through the drum lid using manifold sampling, a flow-indicating device or pressure regulator to verify flow of gases shall be pneumatically connected to the drum punch and operated in the same manner as the flow-indicating device described above in Section B1-1a(44).
- Equipment shall be used to adequately secure the drum-punch sampling system to the drum lid.
- If the headspace gas sample is not taken at the time of drum punching, the presence and diameter of the rigid liner vent hole shall be documented during the punching operation for use in determining an appropriate Scenario 2 DAC. ~~The characterization information does not require subsequent verification.~~

B1-1a(36)(iii) Sampling Through a Pipe Overpack Container Filter Vent Hole

Sampling through an existing filter vent hole in a pipe overpack container (POC) may be performed as an alternative to sampling through the POC's filter if an airtight seal can be maintained. To sample the container headspace-gas through a POC filter vent hole, an appropriate airtight seal shall be used. The sampling apparatus shall form an airtight seal between the POC surface and the manifold or direct canister sampling equipment. To assure that the sample collected is representative, all of the general method, sampling apparatus, and QC requirements specified in EPA's Compendium Method TO-14 (EPA 1988) as appropriate, shall be met in addition to the following requirements:

1 Permit Attachment B3, as determined by analysis of an equipment blank or through use of an
2 OVA. It is recommended that the headspace sampling manifold be heated to 150° Centigrade
3 and periodically evacuated and flushed with humidified zero air, nitrogen, or helium. When not
4 in use, the manifold shall be demonstrated clean before storage with a positive pressure of high
5 purity gas (i.e., zero air, nitrogen, or helium) in both the standard and sample sides.

6 Sampling shall be suspended and corrective actions shall be taken when the analysis of an
7 equipment blank indicates that the VOC limits have been exceeded or if a leak test fails. The
8 Permittees shall require the site project manager to ensure that corrective action has been
9 taken prior to resumption of sampling.

10 B1-1c(4) Manifold Cleaning After Field Reference Standard Collection

11 The sampling system shall be specially cleaned after a field reference standard has been
12 collected, because the field reference standard gases contaminate the standard side of the
13 headspace sampling manifold when they are regulated through the purge assembly. This
14 cleaning requires the installation of a gas-tight connector in place of the sampling head,
15 between the flexible hose and the purge assembly. This configuration allows both the sample
16 and standard sides of the sampling system to be flushed (evacuated and pressurized) with
17 humidified zero air, nitrogen, or helium which, combined with heating the pneumatic lines,
18 should sweep and adequately clean the system's internal surfaces. After this protocol has been
19 completed and prior to collecting another sample, the routine system cleaning and leak check
20 (see previous section) shall also be performed.

21 B1-1c(5) Sampling Head Cleaning

22 To prevent cross contamination, the needle, airtight fitting or airtight seal, adapters, and filter of
23 the sampling heads shall be cleaned in accordance with the cleaning procedures described in
24 EPA's Compendium Method TO-14 (EPA 1988). After sample collection, a sampling head shall
25 be disposed of or cleaned in accordance with EPA's Compendium Method TO-14 (EPA 1988),
26 prior to reuse. As a further QC measure, the needle, airtight fitting or airtight seal, and filter,
27 after cleaning, should be purged with zero air, nitrogen, or helium and capped for storage to
28 prevent sample contamination by VOCs potentially present in ambient air.

29 B1-1d Equipment Calibration and Frequency

30 The manifold pressure sensor shall be certified prior to initial use, then annually, using NIST
31 traceable, or equivalent, standards. If necessary, the pressure indicated by the pressure
32 sensor(s) shall be temperature compensated. The ambient air temperature sensor, if present,
33 shall be certified prior to initial use, then annually, to NIST traceable, or equivalent, temperature
34 standards.

35 The OVA shall be calibrated once per day, prior to first use, or as necessary according to the
36 manufacturer's specifications. Calibration gases shall be certified to contain known analytes
37 from Table B3-2 of Permit Attachment B3 at known concentrations. The balance of the OVA

calibration gas shall be consistent with the manifold purge gas when the OVA is used (i.e., zero air, nitrogen, or helium).

B1-2 Sampling of Homogenous Solids and Soil/Gravel

B1-2a Method Requirements

The methods used to collect samples of transuranic (TRU) mixed waste, classified as homogenous solids and soil/gravel from waste containers, shall be such that the samples are representative of the waste from which they were taken. To minimize the quantity of investigation-derived waste, laboratories conducting the analytical work may require no more sample than is required for the analysis, based on the analytical methods. However, a sufficient number of samples shall be collected to adequately represent waste being sampled. For those waste streams defined as Summary Category Groups S3000 or S4000 in Attachment B, debris that may also be present within these wastes need not be sampled.

Samples of retrievably stored waste containers will be collected using appropriate coring equipment or other EPA approved methods to collect a representative sample. Newly generated wastes that are sampled from a process as it is generated may be sampled using EPA approved methods, including scoops and ladles, that are capable of collecting a representative sample. All sampling and core sampling will comply with the QC requirements specified in B1-2b.

B1-2a(1) Core Collection

Coring tools shall be used to collect cores of homogenous solids and soil/gravel from waste containers, when possible, in a manner that minimizes disturbance to the core. A rotational coring tool (i.e., a tool that is rotated longitudinally), similar to a drill bit, to cut, lift the waste cuttings, and collect a core from the bore hole, shall be used to collect sample cores from waste containers. For homogenous solids and soil/gravel that are relatively soft, non-rotational coring tools may be used in lieu of a rotational coring tool.

To provide a basis for describing the requirements for core collection, diagrams of a rotational coring tool (i.e., a light weight auger) and a non-rotational coring tool (i.e., a thin-walled sampler) are provided in Figures B1-45 and B1-56, respectively.

The following requirements apply to the use of coring tools:

- Each coring tool shall contain a removable tube (liner) that is constructed of fairly rigid material unlikely to affect the composition and/or concentrations of target analytes in the sample core. Materials that are acceptable for use for coring device sleeves are polycarbonate, teflon, or glass for most samples, and stainless steel or brass if samples are not to be analyzed for metals. The Permittees shall require site quality assurance project plans (QAPjPs) to

document that analytes of concern are not present in liner material. The Permittees shall also require sites to document that the materials are unlikely to affect sample results through the collection and analysis of an equipment blank prior to first use as specified in the 'Equipment Blanks' section of this appendix. Liner outer diameter is recommended to be no more than 2 in. and no less than one in. Liner wall thickness is recommended to be no greater than 1/16 in. Before use, the liner shall be cleaned in accordance the requirements in Section B1-2b. The liner shall fit flush with the inner wall of the coring tool and shall be of sufficient length to hold a core that is representative of the waste along the entire depth of the waste. The depth of the waste is calculated as the distance from the top of the sludge to the bottom of the drum (based on the thickness of the liner and the rim at the bottom of the drum). The liner material shall have sufficient transparency to allow visual examination of the core after sampling. If sub-sampling is not conducted immediately after core collection and liner extrusion, then end caps constructed of material unlikely to affect the composition and/or concentrations of target analytes in the core (e.g., Teflon®) shall be placed over the ends of the liner. End caps shall fit tightly to the ends of the liner. The Permittees shall require site specific QAPjPs to indicate the acceptable materials for core liners and end caps.

- A spring retainer, similar to that illustrated in Figures B1-45 and B1-56, shall be used with each coring tool when the physical properties of the waste are such that the waste may fall out of the coring tool's liner during sampling activities. The spring retainer shall be constructed of relatively inert material (e.g., stainless steel or Teflon®) and its inner diameter shall not be less than the inner diameter of the liner. Before use, spring retainers shall be cleaned in accordance with the requirements in Section B1-2b.
- Coring tools may have an air-lock mechanism that opens to allow air inside the liners to escape as the tool is pressed into the waste (e.g., ball check valve). If used, this air-lock mechanism shall also close when the core is removed from the waste container.
- After disassembling the coring tool, a device (extruder) to forcefully extrude the liner from the coring tool shall be used if the liner does not slide freely. All surfaces of the extruder that may come into contact with the core shall be cleaned in accordance with the requirements in Section B1-2(b) prior to use.
- Coring tools shall be of sufficient length to hold the liner and shall be constructed to allow placement of the liner leading edge as close as possible to the coring tools leading edge.
- All surfaces of the coring tool that have the potential to contact the sample core or sample media shall be cleaned in accordance with the requirements in Section B1-2(b) prior to use.

B1-3b(2) On-the-Job Training

- System Operation
- Identification of Packaging Configurations
- Identification of Waste Material Parameters
- Weight and Volume Estimation
- Identification of Prohibited Items

A radiography test drum shall include items common to the waste streams to be generated/stored at the generator/storage site. The test drums shall be divided into layers with varying packing densities or different drums may be used to represent different situations that may occur during radiography examination at the site. Test drums representative of the waste matrix codes for which Waste Stream Profile Form approval is sought, must be examined and successfully identified prior to waste stream shipment. The following is a list of required elements of a radiography test drum(s):

- Aerosol can with puncture
- Horsetail bag
- Pair of coveralls
- Empty bottle
- Irregular shaped pieces of wood
- Empty one gallon paint can
- Full container
- Aerosol can with fluid
- One gallon bottle with three tablespoons of fluid
- One gallon bottle with one cup of fluid (upside down)
- Leaded glove or leaded apron
- Wrench

These items shall be successfully identified by the operator as part of the qualification process. Qualification of radiography operators shall, at a minimum, encompass the following requirements:

- Successfully pass a comprehensive exam based upon training enabling objectives. This exam will be reviewed as part of the Permittees' Audit and Surveillance Program (Permit Attachment B6). The comprehensive exam will address all of the Radiography operation, documentation, characterization, and procedural elements stipulated in this WAP.
- Perform practical capability demonstration in the presence of appointed site radiography subject matter expert. This person is an experienced radiography operator who is qualified as an OJT trainer.

Visual examination experts who are experienced and trained shall assess the need to open individual bags or packages of waste. If individual bags/packages are not opened, estimated weights shall be recorded. Estimated weights shall be established through the use of historically derived waste weight tables and an estimation of the waste volumes. It may not be possible to see through inner bags because of discoloration, dust, or because inner containers are sealed. In these instances, documented acceptable knowledge may be used to identify the ~~matrix parameter category~~ Waste Matrix Code and estimated waste material parameter weights. If acceptable knowledge is insufficient for individual bags/packages, actual weights of waste items, residual materials, packaging materials, or waste material parameters shall be recorded. All visual examination activities shall be documented on video/audio tape and the results of all visual examination shall be documented on visual examination data forms.

Visual examination video tapes of containers which contain classified shapes shall be considered classified information. Visual examination data forms will not be considered classified information.

The visual examination shall consist of a semi-quantitative and/or qualitative evaluation of the waste container contents, and shall be recorded on audio/videotape. The visual examination program has been developed by the Permittees to provide an acceptable level of confidence in radiography. There is no equivalent method found in EPA sampling and analysis guidance documents. The specific requirements of visual examination are described in this WAP.

Standardized training for visual inspection shall be developed to include both formal classroom training and OJT. Visual inspectors shall be instructed in the specific waste generating processes, typical packaging configurations, and expected waste material parameters expected to be found in each Waste Matrix Code at the site. The OJT and apprenticeship shall be conducted by an operator experienced and qualified in visual examination prior to qualification of the candidate. The training shall be site specific to include the various waste configurations generated/stored at the site. For example, the particular physical forms and packaging configurations at each site will vary so operators shall be trained on types of waste that are generated, stored, and/or characterized at that particular site. Visual examination personnel shall be requalified once every two years.

Although site-specific training programs will vary to some degree, the Permittees shall require each site's program to contain the following required elements:

B1-3b(4) Formal Training

- Project Requirements
- State and Federal Regulations
- Application Techniques
- Site-Specific Instruction

1 B1-3b(5) On-the-Job Training

- 2 • Identification of Packaging Configurations
- 3 • Identification of Waste Material Parameters
- 4 • Weight and Volume Estimation
- 5 • Identification of Prohibited Items

6
7 Each visual examination facility shall designate a visual examination expert. The visual
8 examination expert shall be familiar with the waste generating processes that have taken place
9 at that site and also be familiar with all of the types of waste being characterized at that site.
10 The visual examination expert shall be responsible for the overall direction and implementation
11 of the visual examination at that facility. The Permittees shall require site QAPjPs to specify the
12 selection, qualification, and training requirements of the visual examination expert.

13 Figure B1-67 illustrates the overall programmatic approach to the visual examination of waste.
14 If the waste is homogeneous, the expert may decide that a limited visual examination involving
15 a confirmation of the radiography data is appropriate. If the waste is heterogeneous, the expert
16 may decide a full visual examination by opening bags and segregating waste is warranted.
17 Various degrees of segregation are possible based on the expert's judgment and availability of
18 acceptable knowledge data. Site QAPjPs shall specify decision-making criteria for the visual
19 examination expert. In all cases, SOPs shall be developed to support the visual examination
20 process, and the basis for the expert's decisions shall be documented.

21 A description of the waste container contents shall be recorded on a data form as implemented
22 in the site QAPjP. The description shall clearly identify all waste material parameters and
23 provide enough information to estimate weights of waste material parameters. In cases where
24 bags are not opened, a brief written description of the contents of the bags shall contain an
25 estimate of the amount of each waste type in the bags. The written records of visual
26 examination shall be supplemented with the audio/video recording.

27 B1-4 Custody of Samples

28 Chain-of-Custody on field samples (including field QC samples) will be initiated immediately
29 after sample collection or preparation. Sample custody will be maintained by ensuring that
30 samples are custody sealed during shipment to the laboratory. After samples are accepted by
31 the analytical laboratory, custody is maintained by assuring the samples are in the possession
32 of an authorized individual, in that individual's view, in a sealed or locked container controlled by
33 that individual, or in a secure controlled access location. Sample custody will be maintained
34 until the sample is released by the site project manager or until the sample is expended. The
35 Permittees shall require that site QAPjPs or site-specific procedures include a copy of the
36 sample chain-of-custody form and instructions for completing sample chain-of-custody forms in
37 a legally defensible manner. This form will include provisions for each of the following:

- 38 • Signature of individual initiating custody control, along with the date and time.

When preparing SUMMA® or equivalent canisters for shipment, special care shall be taken with the pressure gauge and the associated connections. Metal boxes which have separate compartments, or cardboard boxes with foam inserts are standard shipping containers. The chosen shipping container shall meet selected DOT regulations. If temperatures shall be maintained, an adequate number of cold packs necessary to maintain the preservation temperature shall be added to the package.

Glass jars are wrapped in bubble wrap or another type of protection. The wrapped jar should be placed in a plastic bag inside of the shipping container, so that if the jar breaks, the inside of the shipping container and the other samples will not be contaminated. The plastic bag will enable the receiving analytical lab to prevent contamination of their shipping and receiving area. Plastic jars do not present a problem for shipping purposes. All shipping containers will contain appropriate blank samples to detect any VOC cross-contamination. A DOT approved cooler, or similar package may be used as the shipping container. If temperatures must be maintained, an adequate number of cold packs necessary to maintain the preservation temperature shall be added to the package. If fill material is needed, compatibility between the samples and the fill should be evaluated prior to use.

All sample containers should be affixed with signed tamper-proof seals or devices so that it is apparent if the sample integrity has been compromised and that the identity of the seal or device is traceable to the individual who affixed the seal. A seal should also be placed on the outside of the shipping container for the same reason. Sample custody documentation shall be placed inside the sealed or locked shipping container, with the current custodian signing to release custody. Transfer of custody is completed when the receiving custodian opens the shipping container and signs the custody documentation. The shipping documentation will serve to track the physical transfer of samples between the two custodians.

A Uniform Hazardous Waste Manifest is not required, since samples are exempted from the definition of hazardous waste under RCRA. All other shipping documentation specified in the site specific SOP for sample shipment (i.e., bill of lading, site-specific shipping documentation) is required.

B1-6 List of References

Bechtel BWXT Idaho, LLC (BWXT), 2000, Determination of Drum Age Criteria and Prediction Factors Based on Packaging Configurations, INEEL/EXT-2000-01207, October 2000, Liekhus, K.J., S.M. Djordjevic, M. Devarakonda, and M.J. Connolly, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho.

Lockheed Idaho Technologies Company, 1995, Position for Determining Gas Phase Volatile Organic Compound Concentrations in Transuranic Waste Containers, INEL-95/0109/Revision 1, M.J. Connolly, et. al.

U.S. Environmental Protection Agency (EPA), 1988, "Compendium Method TO-14, The Determination of Volatile Organic Compounds (VOC) in Ambient Air Using SUMMA Passivated

TABLE B1-5
HEADSPACE GAS DRUM AGE CRITERIA SAMPLING SCENARIOS

Scenario	Description
1	A. Unvented drums without rigid poly liners are sampled through the drum lid at the time of venting. B1. Unvented drums with unvented rigid poly liners are sampled through the rigid poly liner at the time of venting or prior to venting. B2. Vented drums with unvented rigid poly liners are sampled through the rigid poly liner at the time of venting or prior to venting. C. Unvented drums with vented rigid poly liners are sampled through the drum lid at the time of venting.
2	Drums that have met the criteria for Scenario 1 and then are vented, but not sampled at the time of venting. ^a
3	Containers (i.e., drums, SWBs, and pipe components) that are initially packaged in a vented condition and sampled in the container headspace and containers that are not sampled under Scenario 1 or 2.

^a Containers that have not met the Scenario 1 DAC at the time of venting must be categorized under Scenario 3. This requires the additional information required of each container in Scenario 3 (i.e., determination of packaging configuration), and such containers can only be sampled after meeting the appropriate Scenario 3 DAC.

TABLE B1-6
SCENARIO 1 DRUM AGE CRITERIA (in days) MATRIX

Summary Category Group	DAC (days)
S3000/S4000	127
S5000	53

Note: Containers that are sampled using the Scenario 1 DAC do not require information on the packaging configuration because the Scenario 1 DAC are based on a bounding packaging configuration. In addition, information on the rigid liner vent hole presence and diameter do not apply to containers that are sampled using the Scenario 1 DAC because they are unvented prior to sampling.

TABLE B1-7
SCENARIO 2 DRUM AGE CRITERIA (in days) MATRIX

	Summary Category Group S3000/S4000				Summary Category Group S5000			
Filter H ₂ Diffusivity ^a	Rigid Liner-Lid Opening Vent Hole Diameter (in) ^b				Rigid Liner-Lid Opening Vent Hole Diameter (in) ^b			
(mol/s/mod fraction)	0.30	0.375	0.75	1.0	0.30	0.375	0.75	1.0
1.9 x 10 ⁻⁶	36	30	23	22	29	22	13	12
3.7 x 10 ⁻⁶	30	25	19	18	25	20	12	11
3.7 x 10 ⁻⁵	13	11	11	11	7	6	6	4

^a The documented filter H₂ diffusivity must be greater than or equal to the listed value to use the DAC for the listed filter H₂ diffusivity (e.g., a container with a filter H₂ diffusivity of 4.2 x 10⁻⁶ must use a DAC for a filter with a 3.7 x 10⁻⁶ filter H₂ diffusivity). If a filter H₂ diffusivity for a container is undocumented or unknown or is less than 1.9 X 10⁻⁶ filter H₂ diffusivity, a filter of known H₂ diffusivity that is greater than or equal to 1.9 X 10⁻⁶ filter H₂ diffusivity must be installed prior to initiation of the relevant DAC period.

^b The documented rigid liner-lid opening vent hole diameter must be greater than or equal to the listed value to use the DAC for the listed rigid liner-lid opening vent hole diameter (e.g., a container with a rigid liner lid opening vent hole of 0.5 in. must use a DAC for a rigid liner-lid opening vent hole of 0.375 in.). If the rigid liner-lid opening vent hole diameter for a container is undocumented during packaging (Attachment B, Section B-3(d)1), repackaging (Attachment B, Section B-3(d)1), and/or venting (Section B1-1a[6][ii]), that container must use a DAC for a rigid liner-lid opening vent hole diameter of 0.30 in.

Note: Containers that are sampled using the Scenario 2 DAC do not require information on the packaging configuration because the Scenario 2 DAC are based on a bounding packaging configuration.

TABLE B1-8
SCENARIO 3 PACKAGING CONFIGURATION GROUPS

Packaging Configuration Group	Covered S3000/S4000 Packaging Configuration Groups	Covered S5000 Packaging Configuration Groups
Packaging Configuration Group 1, 55-gal drums ^a	<ul style="list-style-type: none"> • No layers of confinement, filtered inner lid ^b • No inner bags, no liner bags (bounding case) 	<ul style="list-style-type: none"> • No layers of confinement, filtered inner lid ^b • No inner bags, no liner bags (bounding case)
Packaging Configuration Group 2, 55-gal drums ^a	<ul style="list-style-type: none"> • 1 inner bag • 1 filtered inner bag • 1 liner bag (bounding case) • 1 filtered liner bag 	<ul style="list-style-type: none"> • 1 inner bag • 1 filtered inner bag • 1 liner bag • 1 filtered liner bag • 1 inner bag, 1 liner bag • 1 filtered inner bag, 1 filtered liner bag • 2 inner bags • 2 filtered inner bags • 2 inner bags, 1 liner bag • 2 filtered inner bags, 1 filtered liner bag • 3 inner bags • 3 filtered inner bags • 3 filtered inner bags, 1 filtered liner bag • 3 inner bags, 1 liner bag (bounding case)

1 2	Packaging Configuration Group 3, 55-gal drums ^a	<ul style="list-style-type: none"> • 1 inner bag, 1 liner bag • 1 filtered inner bag, 1 filtered liner bag • 2 inner bags • 2 filtered inner bags • 2 liner bags (bounding case) • 2 filtered liner bags 	<ul style="list-style-type: none"> • 2 liner bags • 2 filtered liner bags • 1 inner bag, 2 liner bags • 1 filtered inner bag, 2 filtered liner bags • 2 inner bags, 2 liner bags • 2 filtered inner bags, 2 filtered liner bags • 3 filtered inner bags, 2 filtered liner bags • 4 inner bags • 3 inner bags, 2 liner bags • 4 inner bags, 2 liner bags (bounding case)
3 4	Packaging Configuration Group 4, pipe components	<ul style="list-style-type: none"> • No layers of confinement inside a pipe component • 1 filtered inner bag, 1 filtered metal can inside a pipe component • 2 inner bags inside a pipe component • 2 filtered inner bags inside a pipe component • 2 filtered inner bags, 1 filtered metal can inside a pipe component • 2 inner bags, 1 filtered metal can inside a pipe component (bounding case) 	<ul style="list-style-type: none"> • No layers of confinement inside a pipe component • 1 filtered inner bag, 1 filtered metal can inside a pipe component • 2 inner bags inside a pipe component • 2 filtered inner bags inside a pipe component • 2 filtered inner bags, 1 filtered metal can inside a pipe component • 2 inner bags, 1 filtered metal can inside a pipe component (bounding case)
5 6	Packaging Configuration Group 5, Standard Waste Box ^a	<ul style="list-style-type: none"> • No layers of confinement • 1 SWB liner bag (bounding case) 	<ul style="list-style-type: none"> • No layers of confinement • 1 SWB liner bag (bounding case)
7 8	Packaging Configuration Group 6, Standard Waste Box ^a	<ul style="list-style-type: none"> • any combination of inner and/or liner bags that is less than or equal to 6 • 5 inner bags, 1 SWB liner bag (bounding case) 	<ul style="list-style-type: none"> • any combination of inner and/or liner bags that is less than or equal to 6 • 5 inner bags, 1 SWB liner bag (bounding case)

^a If a specific Packaging Configuration Groups cannot be ~~assigned~~ determined based on the data collected during ~~characterization and confirmation~~ packaging (Attachment B, Section B-3(d)1) and/or repackaging (Attachment B, Section B-3(d)1), a conservative default Packaging Configuration Group of 3 for drums and 6 for SWBs must be assigned provided the drums ~~and SWBs~~ do not contain pipe component packaging. If pipe components are present as packaging in the drums ~~or SWBs~~, the pipe components must be sampled following the requirements for Packaging Configuration Group 4.

^b A "filtered inner lid" is the inner lid on a double lid drum that contains a filter.

Definitions:

Liner Bags: One or more optional plastic bags that are used to control radiological contamination. Liner bags for drums have a thickness of approximately 11 mils. SWB liner bags have a thickness of approximately 14 mils. Liner bags are typically similar in size to the container.

Inner Bags: One or more optional plastic bags that are used to control radiological contamination. Inner bags have a thickness of approximately 5 mils and are typically smaller than liner bags.

TABLE B1-9
SCENARIO 3 DRUM AGE CRITERIA (in days) MATRIX FOR S5000 WASTE
BY PACKAGING CONFIGURATION GROUP

Packaging Configuration Group 1						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Rigid Liner-Lid-Opening Vent Hole Diameter ^b				No Liner Lid	No Liner
	0.3-inch Diameter Hole	0.375- inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole		
1.9 x 10 ⁻⁶	131	95	37	24	4	4
3.7 x 10 ⁻⁶	111	85	36	24	4	4
3.7 x 10 ⁻⁵	28	28	23	19	4	4

Packaging Configuration Group 2						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Rigid Liner-Lid-Opening Vent Hole Diameter ^b				No Liner Lid	No Liner
	0.3-inch Diameter Hole	0.375- inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole		
1.9 x 10 ⁻⁶	175	138	75	60	30	11
3.7 x 10 ⁻⁶	152	126	73	59	30	11
3.7 x 10 ⁻⁵	58	57	52	47	28	8

Packaging Configuration Group 3						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Rigid Liner-Lid-Opening Vent Hole Diameter ^b				No Liner Lid	No Liner
	0.3-inch Diameter Hole	0.375- inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole		
1.9 x 10 ⁻⁶	199	161	96	80	46	16
3.7 x 10 ⁻⁶	175	148	93	79	46	16

3.7 x 10 ⁻⁵	72	72	67	62	42	10
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Packaging Configuration Group 4	
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Headspace Sample Taken Inside Pipe Component
> 1.9 x 10 ⁻⁶	152

Packaging Configuration Group 5	
Filter H ₂ Diffusivity ^{a, c} (mol/s/mol fraction)	Headspace Sample Taken Inside SWB
> 7.4 x 10 ⁻⁶	15

Packaging Configuration Group 6	
Filter H ₂ Diffusivity ^{a, c} (mol/s/mol fraction)	Headspace Sample Taken Inside SWB
> 7.4 x 10 ⁻⁶	56

^a The documented filter H₂ diffusivity must be greater than or equal to the listed value to use the DAC for the listed filter H₂ diffusivity (e.g., a container with a filter H₂ diffusivity of 4.2 x 10⁻⁶ must use a DAC for a filter with a 3.7 x 10⁻⁶ filter H₂ diffusivity). If a filter H₂ diffusivity for a container is undocumented or unknown or is less than 1.9 X 10⁻⁶ filter H₂ diffusivity, a filter of known H₂ diffusivity that is greater than or equal to 1.9 X 10⁻⁶ filter H₂ diffusivity must be installed prior to initiation of the relevant DAC period.

^b The documented rigid liner-lid opening vent hole diameter must be greater than or equal to the listed value to use the DAC for the listed rigid liner-lid opening vent hole diameter (e.g., a container with a rigid liner-lid opening vent hole of 0.5 in. must use a DAC for a rigid liner-lid opening vent hole of 0.375 in.). If the rigid liner-lid opening vent hole diameter for a container is undocumented during packaging (Attachment B, Section B-3(d)1), repackaging (Attachment B, Section B-3(d)1), and/or venting (Section B1-1a[6][ii]), that container must use a DAC for a rigid liner-lid opening vent hole diameter of 0.30 in.

^c The filter H₂ diffusivity for SWBs is the sum of the diffusivities for all of the filters on the container because SWBs have more than 1 filter.

TABLE B1-10
SCENARIO 3 DRUM AGE CRITERIA (in days) MATRIX FOR S3000 AND
S4000 WASTE BY PACKAGING CONFIGURATION GROUP

Packaging Configuration Group 1						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Rigid Liner-Lid-Opening Vent Hole Diameter ^b				No Liner Lid	No Liner
	0.3-inch Diameter Hole	0.375- inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole		
1.9 x 10 ⁻⁶	131	95	37	24	4	4
3.7 x 10 ⁻⁶	111	85	36	24	4	4
3.7 x 10 ⁻⁵	28	28	23	19	4	4

Packaging Configuration Group 2						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Rigid Liner-Lid-Opening Vent Hole Diameter ^b				No Liner Lid	No Liner
	0.3-inch Diameter Hole	0.375- inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole		
1.9 x 10 ⁻⁶	213	175	108	92	56	18
3.7 x 10 ⁻⁶	188	161	105	90	56	17
3.7 x 10 ⁻⁵	80	80	75	71	49	10

Packaging Configuration Group 3						
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Rigid Liner-Lid-Opening Vent Hole Diameter ^b				No Liner Lid	No Liner
	0.3-inch Diameter Hole	0.375- inch Diameter Hole	0.75-inch Diameter Hole	1-inch Diameter Hole		
1.9 x 10 ⁻⁶	283	243	171	154	107	34
3.7 x 10 ⁻⁶	253	225	166	151	106	31
3.7 x 10 ⁻⁵	121	121	115	110	84	13

Packaging Configuration Group 4	
Filter H ₂ Diffusivity ^a (mol/s/mol fraction)	Headspace Sample Taken Inside Pipe Component
> 1.9 x 10 ⁻⁶	152

Packaging Configuration Group 5	
Filter H ₂ Diffusivity ^{a, c} (mol/s/mol fraction)	Headspace Sample Taken Inside SWBS
> 7.4 x 10 ⁻⁶	15

Packaging Configuration Group 6	
Filter H ₂ Diffusivity ^{a, c} (mol/s/mol fraction)	Headspace Sample Taken Inside SWBS
> 7.4 x 10 ⁻⁶	56

^a The documented filter H₂ diffusivity must be greater than or equal to the listed value to use the DAC for the listed filter H₂ diffusivity (e.g., a container with a filter H₂ diffusivity of 4.2 x 10⁻⁶ must use a DAC for a filter with a 3.7 x 10⁻⁶ filter H₂ diffusivity). If a filter H₂ diffusivity for a container is undocumented or unknown or is less than 1.9 X 10⁻⁶ filter H₂ diffusivity, a filter of known H₂ diffusivity that is greater than or equal to 1.9 X 10⁻⁶ filter H₂ diffusivity must be installed prior to initiation of the relevant DAC period.

^b The documented rigid liner-lid-opening vent hole diameter must be greater than or equal to the listed value to use the DAC for the listed rigid liner-lid-opening vent hole diameter (e.g., a container with a rigid liner-lid-opening vent hole of 0.5 in. must use a DAC for a rigid liner-lid-opening vent hole of 0.375 in.). If the rigid liner-lid-opening vent hole diameter for a container is undocumented during packaging (Attachment B, Section B-3(d)1), repackaging (Attachment B, Section B-3(d)1), and/or venting (Section B1-1a[6][ii]), that container must use a DAC for a rigid liner-lid-opening vent hole diameter of 0.30 in.

^c The filter H₂ diffusivity for SWBs is the sum of the diffusivities for all of the filters on the container because SWBs have more than 1 filter.

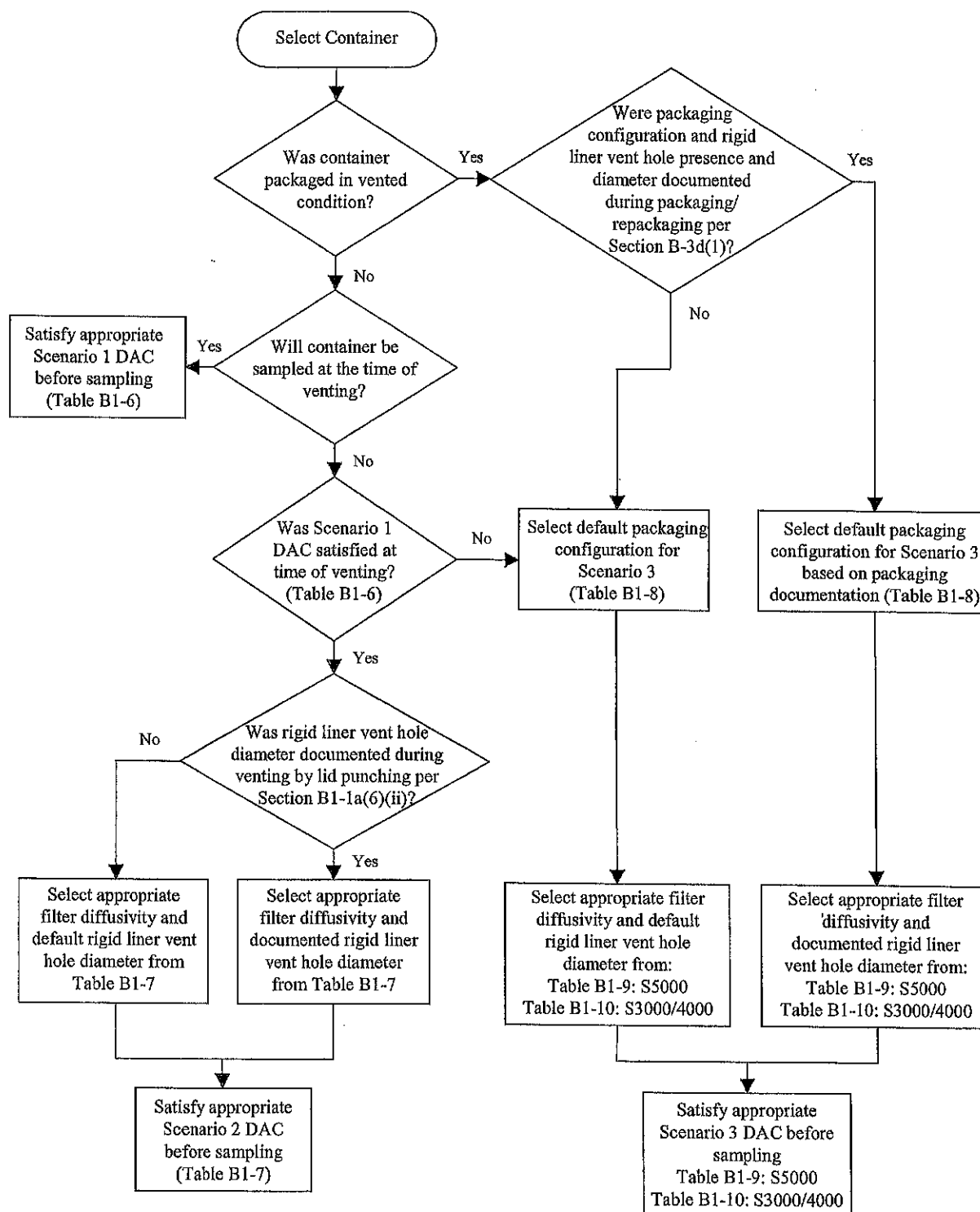


Figure B1-1
Headspace Gas Drum Age Criteria Sampling Scenario Selection Process

1 Accuracy

2 A field reference standard must be collected using headspace-gas sampling equipment to
3 assess the accuracy of the headspace-gas sampling operation at a frequency of one field
4 reference standard for every 20 drums sampled or per sampling batch. Corrective action must
5 be taken if the %R of the field-reference standard is less than 70 or greater than 130.

6 Field blanks must also be collected at a frequency of 1 field blank for every 20 drums or
7 sampling batch sampled to assess possible contamination in the headspace gas sampling
8 method. Equipment blanks must also be collected at a frequency of 1 equipment blank for each
9 equipment cleaning batch to assess possible contamination in the equipment cleaning method.
10 Corrective actions must be taken if the blank exceeds three times the MDLs listed for any of the
11 compounds listed in Table B3-2.

12 Completeness

13 Sampling completeness shall be expressed as the number of valid samples collected as a
14 percent of the total number of samples collected for each waste stream. The completeness can
15 also be expressed as the number of valid samples collected as a percent of the total number of
16 drums for each waste stream. A valid sample is defined as a sample collected in accordance
17 with approved sampling methods and the drum was properly prepared for sampling (e.g., the
18 polyliner was vented to the drum headspace). The Permittees shall require participating
19 sampling facilities to achieve a minimum 90 percent completeness. The amount and type of
20 data that may be lost during the headspace-gas sampling operation cannot be predicted in
21 advance. The Permittees shall require the Site Project Quality Assurance (QA) Officer to
22 evaluate the importance of any lost or contaminated headspace-gas samples and take
23 corrective action as appropriate.

24 Comparability

25 Consistent use and application of uniform procedures and equipment, as specified in Permit
26 Attachment B1 and application of data useability criteria, should ensure that headspace gas
27 sampling operations are comparable when sampling headspace at the different sampling
28 facilities. The Permittees shall require each site to take corrective actions if uniform procedures,
29 equipment, or operations are not followed without approved and justified deviations. In addition,
30 laboratories analyzing samples must successfully participate in the Performance Demonstration
31 Program (PDP).

32 Representativeness

33 Specific headspace-gas sampling steps to ensure samples are representative include:

- 34 • Selection of the correct DAC Scenario and waste packaging configuration and
35 meeting DAC equilibrium times.

If core recovery is less than 50 percent of the depth of the waste, a second coring location shall be randomly selected. The core with the best core recovery shall be used for sample collection.

One randomly selected container within a drum will be chosen if the drum contains individual waste containers.

B3-4 Radiography

Quality Assurance Objectives

The QAOs for radiography are detailed in this section. If the QAOs described below are not met, then corrective action shall be taken. It should be noted that radiography does not have a specific MDL because it is primarily a qualitative determination. The objective of radiography for the program is to verify the waste matrix code and identify prohibited items for each waste container and to estimate each waste material parameter weight (Table B3-1). The Permittees shall require each site to describe all activities required to achieve these objectives in the site quality assurance project plan (QAPJP) and standard operating procedures (SOP).

Data to meet these objectives must be obtained from an audio/videotaped (or equivalent media) scan provided by trained radiography operators at the sites. Results must also be recorded on a radiography data form. The precision, accuracy, completeness, and comparability objectives for radiography data are presented below.

Precision

~~The quantitative determination of the vent hole diameter is verified through confirmatory visual examination and through replicate scan measurements. Because of the criticality of the vent diameter in establishing DAC equilibrium times, the precision limit for a measurement is 0% RPD as defined in Section B3-1.~~

The qualitative determinations, such as verifying the waste matrix code, made during radiography do not lend themselves to statistical evaluation of precision because of the qualitative nature of the inspection. However, comparison of data derived from radiography and visual examination on the same waste containers at the Rocky Flats Environmental Technology Site and the Idaho National Engineering Laboratory indicates that radiography operators can provide estimated inventories and weights of waste items in a waste container. As a measure of precision, the Permittees shall require each Site Project QA Officer to calculate and report the RPD between the estimated waste material parameter weights as determined by radiography and these same parameters as determined by visual examination. Additionally, the precision of radiography is verified prior to use by tuning precisely enough to demonstrate compliance with QAOs through viewing an image test pattern.

- 1 • Calculations have been verified by a valid calculation program, a spot check of
2 verified calculation programs, and/or 100 percent check of all hand calculations.
3 Values that are not verifiable to within rounding or significant difference
4 discrepancies must be rectified prior to completion of independent technical
5 review.
- 6 • The data have been reviewed for transcription errors.
- 7 • The testing, sampling, or analytical data QA documentation for Batch Data
8 Reports is complete and includes, as applicable, raw data, DAC and equilibrium
9 calculations and times, calculation records, chain-of-custody (COC) forms,
10 calibration records (or references to an available calibration package), QC
11 sample results, and copies or originals of gas canister sample tags. Corrective
12 action will be taken to ensure that all Batch Data Reports are complete and
13 include all necessary raw data prior to completion of the independent technical
14 review.
- 15 • QC sample results are within established control limits, and if not, the data have
16 been appropriately qualified in accordance with data useability criteria. Data
17 outside of established control limits will be qualified as appropriate, assigned an
18 appropriate qualifier flag, discussed in the case narrative, and included as
19 appropriate in calculations for completeness .
- 20 • Reporting flags (Table B3-14) were assigned correctly.
- 21 • Sample holding time and preservation requirements were met, or exceptions
22 documented.
- 23 • Radiography tapes have been reviewed (independent observation) on a waste
24 container basis at a minimum of once per testing batch or once per day of
25 operation, whichever is less frequent (Attachment B1, Section B1-3b(2)). The
26 radiography tape will be reviewed against the data reported on the radiography
27 form to ensure that the data are correct and complete.
- 28 • Field sampling records are complete. Incomplete or incorrect field sampling
29 records will be subject to resubmittal prior to completion of the independent
30 technical review.

31 B3-10a(2) Technical Supervisor Review

32 The technical supervisor review ensures that the independent technical review was performed
33 completely, that the Batch Data Report is complete, and verifies that the results are technically
34 reasonable. This review validates and verifies that the characterization performed in this area is
35 ready for QA office review.

One hundred percent of the batch data reports must receive technical supervisory signature release for each testing batch, sampling batch, analytical batch and on-line batch. The technical supervisory signature release must occur as soon as practicably possible after the independent technical review in order to determine and correct negative quality trends in the sampling or analytical process. However at a minimum, the technical supervisory signature release must be performed before any waste associated with the data reviewed is managed, stored, or disposed at WIPP. This release must ensure the following:

- The data are technically reasonable based on the technique used.
- All data have received independent technical review with the exception of radiography tapes, which shall receive periodic technical review as specified in Attachment B1, Section B1-3b(2).
- The testing, sampling, or analytical data QA documentation for Batch Data Reports is complete and includes, as applicable, raw data, DAC and equilibrium calculations and times, calculation records, COC forms, calibration records, QC sample results, and original or copies of gas sample canister tags.
- Sample holding time requirements were met, or exceptions documented.
- Field sampling records are complete.

B3-10a(3) QA Officer Review

The data generation level QA review ensures that the Batch Data Report is complete, that QC checks meet the acceptance criteria, and that the appropriate QAOs have been met. This review verifies and validates that the characterization results meet the program QA/QC, that instrument performance criteria have been met, and that QAOs for the subject characterization area have been met.

The Permittees shall require for each site that one hundred percent of the Batch Data Reports receive QA officer (or designee) signature release. The QA Officer signature release must occur as soon as practicably possible after the technical supervisory signature release in order to determine and correct negative quality trends in the sampling or analytical process. However at a minimum, the QA Officer signature release must be performed before any waste associated with the data reviewed is managed, stored, or disposed at WIPP. This release must ensure the following:

- Independent technical and technical supervisory reviews have been performed as evidenced by the appropriate signature releases.
- The QA documentation for Batch Data Reports is complete as appropriate for the point of data generation.

- 1 ● Analytical batch QC checks (e.g., laboratory duplicates, laboratory blanks, matrix
2 spikes, matrix spike duplicates, laboratory control samples) were properly
3 performed and meet the established QAOs and are within established data
4 useability criteria.
- 5 ● On-line batch QC checks (e.g., field blanks, on-line blanks, on-line duplicates,
6 on-line control samples) were properly performed and meet the established
7 QAOs and are within established data useability criteria.
- 8 ● Proper procedures were followed to ensure representative samples of
9 headspace gas and homogenous solids and soil/gravel were taken.

10 B3-10b(2) Site Project Manager

11 The Site Project Manager Review is the final validation that all of the data contained in Batch
12 Data Reports have been properly reviewed as evidenced by signature release and completed
13 checklists.

14 One hundred percent of the Batch Data Reports must have Site Project Manager signature
15 release. The Site Project Manager signature release must occur as soon as practicably
16 possible after the Site Project QA officer signature release in order to determine and correct
17 negative quality trends in the sampling or analytical process. However at a minimum, the Site
18 Project Manager signature release must be performed before any waste associated with the
19 data reviewed is managed, stored, or disposed at WIPP. This signature release must ensure
20 the following:

- 21 ● The Site Project Manager or designee shall determine the validity of the drum
22 age criteria (DAC) assignment made at the data generation level based upon an
23 assessment of the data collection and evaluation necessary to make the
24 assignment.
- 25 ● Data generation level independent technical, technical supervisory, and QA
26 officer (or designee) review, validation, and verification have been performed as
27 evidenced by the completed review checklists and appropriate signature
28 releases.
- 29 ● Batch data review checklists are complete.
- 30 ● Batch Data Reports are complete and data are properly reported (e.g., data are
31 reported in the correct units, with the correct number of significant figures, and
32 with qualifying flags).
- 33 ● Verify that data are within established data assessment criteria and meet all
34 applicable QAOs (Section B3-11).

- 1 ● Whether an appropriate packaging configuration and Drum Age Criteria (**DAC**)
2 were applied and documented in the headspace gas sampling documentation,
3 and whether the drum age was met prior to sampling.

- 4 ● Whether all TICs were appropriately identified and reported in accordance with
5 the requirements of Section B3-1 prior to submittal of a WSPF for a waste
6 stream or waste stream lot.

- 7 ● Whether the overall completeness, comparability, and representativeness QAOs
8 were met for each of the analytical and testing procedures as specified in
9 Sections B3-2 through B3-9 prior to submittal of a WSPF for a waste stream or
10 waste stream lot.

- 11 ● Whether the PRQLs for all analyses were met prior to submittal of a WSPF for a
12 waste stream or waste stream lot.

13 If the Site Project Manager determines that insufficient data have been collected to make the
14 determinations listed above, additional data collection efforts must be undertaken. The
15 reconciliation of a waste stream shall be performed prior to submittal of WSPF for that waste
16 stream. For subsequent shipments, data reconciliation is done on all containers or samples
17 prior to shipment to WIPP. The Permittees shall not manage, store, or dispose TRU mixed
18 waste at WIPP unless the Site Project Manager determines that the WAP-required waste
19 parameters listed above have been met.

20 The statistical procedure presented in Permit Attachment B2 shall be used by participating Site
21 Project Managers to evaluate and report waste characterization data from the analysis of
22 homogeneous solids and soil/gravel. The procedure, which calculates UCL_{90} values, shall be
23 used to assess compliance with the DQOs in Attachment B, Section B-4a(1) as well as with
24 RCRA regulations. The procedure must be applied to all laboratory analytical data for total
25 VOCs, total SVOCs, and total metals. For RCRA regulatory compliance (40 CFR § 261.24),
26 data from the analysis of the appropriate metals and organic compounds shall be expressed as
27 toxicity characteristic leaching procedure (**TCLP**) values or results may also be compared to the
28 TC levels expressed as total values. These total values will be considered the regulatory
29 threshold limit (**RTL**) values for the WAP. RTL values are obtained by calculating the
30 weight/weight concentration (in the solid) of a TC analyte that would give the regulatory
31 weight/volume concentration (in the TCLP extract), assuming 100-percent analyte dissolution.

32 B3-11b Reconciliation at the Permittee Level

33 The Permittees must also ensure that data of sufficient type, quality, and quantity are collected
34 to meet WAP DQOs. The Permittees will ensure sufficient data have been collected in
35 accordance with Attachment B, Section B-4a(1) to determine the following:

Required Information	Radiography	Visual Examination as QC Check on Radiography	Visual Verification of Acceptable Knowledge	Comment
Indication of vented rigid liners	X	X	X	Only required for containers with rigid liners. If radiography is used to verify, then include in Testing Batch Data Report.
Description of container contents	X	X	X	Provide enough detail to identify all discernible waste items, etc., and to verify estimated weights for the 12 waste-matrix material parameters.
Verification that the physical form matches the waste stream description and Waste Matrix Code.	X	X	X	Summary Category Group included in waste matrix code
Indication of sealed containers > 4L	X	X	X	
Amount of free liquids	X	X	X	
Estimated weights for the 12 waste-matrix material parameters	X	X	X	Table B3-1 lists waste-matrix material parameters.
Container gross weight	X	X	X	
Container empty weight	O	O	O	Established, documented empty container weights can be used.
Comments	X	X	X	
Reference to or copy of associated NCRs, if any	X	X	X	Copies of associated NCRs must be available.
Visual examination expert decisions		X		Only applicable if visual examination expert is consulted during visual examination.
Verify absence of prohibited items	X	X	X	
Operator signature and date of test	X	X	X	Signatures of both operators required for Visual Verification of Acceptable Knowledge

TABLE B3-12
SAMPLING BATCH DATA REPORT CONTENTS

Required Information	Headspace Gas	Solid Sampling	Comment
Batch Data Report Date	X	X	
Batch number	X	X	
Waste stream name and/or number	O	O	
Waste Matrix Code		X	Summary Category Group included in Waste Matrix Code
Procedure (specific version used)	X	X	If procedure cited contains more than one method, the method used must also be cited. Can use revision number, date, or other means to track specific version used.
Container number	X	X	
Container type	O	O	Drums, Standard Waste Box, Ten Drum Overpack, etc.
Sample matrix and type	X	X	
Analyses requested and laboratory	X	X	
Point of origin for sampling	X	X	Location where sample was taken (e.g., building number, room)
Sample number	X	X	
Sample size	X	X	
Sample location	X	X	Location within container where sample is taken. (For HSG, specify what layer of confinement was sampled. For solids, physical location within container.)
Sample preservation	X	X	
Person collecting sample	X	X	
Person attaching custody seal	O	O	May or may not be the same as the person collecting the sample
Chain of custody record	X	X	Original or copy is allowed
Sampling equipment numbers	X	X	For disposable equipment, a reference to the lot
Packaging Configuration	X		If Scenario 3 is used, the packaging configuration used in determining the DAG must be documented in the headspace gas sampling documentation.

Required Information	Headspace Gas	Solid Sampling	Comment
Drum age	X		Must include all supporting determinative information, including but not limited to packaging date, equilibrium start time, storage temperature, and sampling date/time. If Scenario 3 is used, the packaging configuration, filter diffusivity, liner presence/absence, and rigid liner vent hole diameter used in determining the DAC must be documented. If Scenario 1 and 2 are used together, the filter diffusivity and rigid liner vent hole diameter used in determining the DAC must be documented. If default values are used for retrievably stored waste, these values must clearly be identified as such.
Cross-reference of sampling equipment numbers with associated cleaning batch numbers	O	X	As applicable to the equipment used for the sampling. For disposable equipment, a reference to the lot and procurement records to support cleanliness is sufficient
Drum age	X		
Equilibration time	X		
Verification of rigid liner venting	X		Only applicable to containers with rigid liners
Verification that sample volume taken is small in comparison to the available volume	X		Must include headspace gas volume when it can be estimated
Scale Calibration		O	
Depth of waste		X	For newly generated waste, if a sampling method other than coring is used, this is replaced by documentation that a representative sample has been taken.
Calculation of core recovery		X	For newly generated waste, if a sampling method other than coring is used, this is replaced by documentation that a representative sample has been taken.
Co-located core description		X	For newly generated waste, if a sampling method other than coring is used, this is replaced by documentation that a QC sample has been taken.
Time between coring and subsampling		X	Only applicable to coring.
OVA calibration and reading	O		Only applicable to manifold systems. Must be done in accordance with manufacturer's specifications

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>21</u>	Are procedures in place to ensure that each TRU waste container will be sampled and analyzed according to sampling protocols, equipment, and QA/QC methods as specified in Attachment B1 ? (Section B-3a(1))					
<u>22</u>	Are procedures in place to ensure that compounds not on the list of target analytes are reported as tentatively identified compounds (TIC) according to SW-846 TIC identification guidance and that the TIC will be added to the target headspace gas analyte list if it appears in the 20 NMAC 4.1.200 (incorporating 40 CFR Part 261) Appendix VIII list and if they are reported in 25% of the waste containers sampled from a given waste stream? (Section B-3a(1))					
<u>23</u>	Are procedures in place to ensure that a randomly selected set of samples will be collected through core sampling or other EPA approved representative methods from the population of waste containers for homogeneous and soil/gravel waste streams? Are procedures in place that a sufficient number of samples are collected to evaluate the toxicity characteristic of a waste stream at a 90 percent Upper Confidence limit as specified in Attachment B2? (Section B-3a(2))					
<u>24</u>	Are procedures in place to ensure that total analyses or TCLP of PCBs, VOCs, SVOCs, and Metals are performed on all core samples to determine if the waste exhibits a toxicity characteristic? (Section B-3a(2))					
<u>25</u>	Are procedures in place to ensure that Acceptable Knowledge is used in waste characterization activities to delineate TRU waste streams, to assess whether TRU debris waste exhibits a toxicity characteristic, and to assess whether TRU wastes are listed? (Section B-3b)					
<u>26</u>	Are procedures in place to ensure that radiography and/or visual examination are used to: <ul style="list-style-type: none"> Examine every waste container to determine the physical form Identify the waste packaging configuration Identify the presence and diameter of vent holes Identify liquids and containerized gases Verify the physical form matches the waste stream description (Section B-3c)					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>27</u>	<p>Are procedures in place to ensure that the following characterization activities shall occur for newly generated wastes:</p> <ul style="list-style-type: none"> Acceptable Knowledge for all wastes, with confirmatory: <ul style="list-style-type: none"> Either visual examination during packaging or radiography (or VE in lieu of radiography) after packaging for all waste containers, ensuring this occurs prior to any treatment designed to supercompact waste Headspace gas analysis for all waste containers or randomly selected containers from waste streams that meet the conditions for reduced headspace gas sampling listed in Section B-3a(1) Total VOC, SVOC, and Metals analyses for a selected number of homogeneous solids and soil/gravel waste containers for control charting purposes (annually thereafter), as specified in Attachment B2 Evaluation of any TICs found in headspace gas and totals analyses <p>(Section B-3d(1))</p>					
<u>27a</u>	<p>Are procedures in place to ensure that the visual examination during packaging for all waste containers includes the documentation of packaging configuration and rigid liner vent hole presence and diameter necessary to determine the appropriate DAC in accordance with Permit Attachment B1, Section B1-1?</p> <p>(Section B-3d(1))</p>					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	DATA GENERATION, VERIFICATION, VALIDATION, DOCUMENTATION, AND QUALITY ASSURANCE					
29a	Are procedures in place to ensure that the visual examination during repackaging for all waste containers includes the documentation of packaging configuration and rigid liner vent hole presence and diameter necessary to determine the appropriate DAC in accordance with Permit Attachment B1, Section B1-1? (Section B-3d(1))					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>30</u>	<p>Are procedures in place to ensure that the following Data Quality Objectives are met:</p> <ul style="list-style-type: none"> • Use Headspace gas sampling and analysis to identify and quantify VOCs to ensure compliance with the environmental compliance standards of 20 NMAC 4.1.500 and to confirm hazardous waste identification by Acceptable Knowledge • Perform totals analyses of homogeneous solids and soils/gravel wastes to establish if the waste is hazardous based on the toxicity characteristics levels in 20 NMAC 4.1.200 through a comparison of the upper confidence limits (UCL₉₀) of the mean concentrations to confirm hazardous waste characterization by Acceptable Knowledge • Perform totals analyses of homogeneous solids and soils/gravel wastes to report the average concentration of hazardous constituents in a waste stream as a function upper confidence limits (UCL₉₀) of the mean concentrations, with all averages greater than the MDL considered a detection and subsequent assignment, as applicable, of a hazardous waste code, and as specified in 20 NMAC 2.1.200 to confirm hazardous waste characterization by Acceptable Knowledge • Use radiography or visual examination to verify physical waste form, identify prohibited items, verify DAC scenario and waste packaging configuration, verify determination of sampling and analytical requirements, and to confirm waste stream delineation by Acceptable Knowledge • Use visual examination as a process check of radiography (Section B-4a(1)) 					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>40</u>	<p>Are procedures in place to ensure that 100 percent of all batch data reports receive a Site Project Manager signature release with an associated review checklist prior to characterization of the associated waste and shipment to the WIPP. This release shall ensure the following:</p> <ul style="list-style-type: none"> The Site Project Manager or designee shall determine the validity of the drum age criteria (DAC) assignment made at the data generation level based upon an assessment of the data collection and evaluation necessary to make the assignment. Non-programmatic technical reviews, technical supervisory reviews, and QA Officer reviews have been performed and documented through signature Data have been verified to be within established data assessment criteria and meet all applicable QAOs Sampling, testing, and analytical batches are complete and data are reported to the correct units, qualifier flags, and significant figures. The testing, sampling, and QA data review checklists are complete (Section B3-10b(2)) 					

Headspace Gas Checklist

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	HEADSPACE GAS SAMPLING FREQUENCY					
182	Are procedures in place to ensure that every retrievably stored and newly generated waste containers or randomly selected containers from waste streams that meet the conditions for reduced headspace gas sampling listed in Section B-3a(1) will undergo headspace gas sampling and analysis? (Section B-3a, -3b)					
183	<p>Are procedures in place to ensure that all waste containers or randomly selected containers from waste streams that meet the conditions for reduced headspace gas sampling listed in Section B-3a(1) will be allowed to equilibrate to sampling room temperature for 72 hours prior to sampling (18° C or higher) and that the drum ages specified in accordance with Section B1-1a(1) and B1-1a(2) of 142 days for debris waste and 225 days for homogeneous and soil/gravel wastes are met? All information necessary to determine drum age criteria must be determined, including but not limited to:</p> <ul style="list-style-type: none"> • Scenario Determination • Packaging Configuration • Filter Diffusivity • Liner/Lid Opening Diameter <p>Are procedures in place to ensure that equilibrium time and drum ages are documented for each container from which a headspace gas sample is collected as specified in Section B1-1a(3)? (Section B1-1a)</p>					
	HEADSPACE GAS SAMPLING GENERAL REQUIREMENTS					
184	Are procedures in place to ensure all containers of waste are properly vented through individual-carbon composite filters or filters with equivalent VOC dispersion characteristics to ensure that gases are adequately vented and characteristic waste does not develop? (Section B-1c)					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>185</u>	Are procedures in place to ensure waste containers and contents are allowed to equilibrate to the temperature of the sampling area (18 °C and higher or higher) by waiting a minimum of 72 hours prior to sampling and that S3000 and S4000 wastes are sampled a minimum of 225 days after packaging? (Section B1-1a)					
<u>185a</u>	Are procedures in place to ensure that radiography and/or visual examination are used in conjunction with acceptable knowledge to determine and/or verify the appropriate sampling scenario and packaging configuration for each container from which a headspace gas sample is collected? (Section B1-1a(3))					
<u>186</u>	Are procedures in place to ensure that the following gas sample container and holding time requirements are met: <ul style="list-style-type: none"> The minimum sample volume for VOC sample collection is 250 mL. (Note: a single 100 mL sample may be collected if the headspace is limited) Holding temperatures shall be between 0° C and 40° C (Table B1-1) 					
<u>187</u>	Are procedures in place to ensure that all sampling is performed in an appropriate radiation containment area? (Section B1-1a)					
<u>188</u>	Are procedures in place to ensure that headspace gas are analyzed for the analytes listed in Table B3-2 of the Attachment B3? (Section B1-1a)					
<u>189</u>	Are procedures in place to ensure that all headspace gas analyses utilize either SUMMA® or equivalent canisters or on-line integrated sampling/analysis systems? (Section B1-1a)					
	MANIFOLD SAMPLING					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
190	<p>Are procedures, processes, and equipment in place to ensure that the following sampling procedures are implemented:</p> <ul style="list-style-type: none"> The sampling equipment is leak checked and cleaned upon first use and as needed The manifold and sample canisters are evacuated to 0.1 mm Hg prior to sample collection Cleaned and evacuated sample canisters are attached to the evacuated manifold before the manifold inlet valve is opened The manifold inlet valve is attached to a changeable filter connected to different sampling heads that are capable of punching through metal lid of the drum while maintaining an airtight seal for sampling through the drum lid, penetrating the filter, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole either a side port needle sampling head capable of forming an airtight seal (for penetrating a filter or rigid poly liner when necessary), a drum punch sampling head capable of forming an airtight seal (capable of punching through the metal lid of a drum while maintaining an airtight seal for sampling through the drum lid), or a sampling head with an airtight seal for sampling through a pipe overpack container filter vent hole. Refer to Section B1-1a(6) for descriptions of these sampling heads. Field blanks are collected using samples of room air collected in the sampling area in the immediate vicinity of the waste container. (Note: field blanks for SUMMA® canisters are collected directly into the canister) Manifold equipped with purge assembly that allows QC samples to be collected through all sampling components that affect compliance with QAOs The manifold internal volume is calculated and documented in a field logbook 					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
191a	<ul style="list-style-type: none"> A dry vacuum pump capable of reducing the manifold pressure to 0.05 mm Hg. (Note: If an oil vacuum pump is used precautions such as a molecular sieve or cryogenic trap shall be used to prevent diffusion of oil vapors back into the manifold) A minimum distance between the needle and the valve that isolates the pump from the manifold If real time blanks are not available, the manifold shall be equipped with an OVA capable of detecting all analytes listed in Table B3-2 and is capable of measuring total VOC concentrations below the lowest headspace gas VOC constituent PRQL (Section B1-1a(44))					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>192a</u>	<ul style="list-style-type: none"> A purge assembly that allows the sampling head to be connected to the standard side of the manifold. A flow indicating device or pressure regulator that is connected downstream of the purge assembly to monitor the flow rate or pressure of gases through the purge assembly to ensure that excess flow is available to prevent ambient air from contaminating the QC samples. (Section B1-1a(44))					
<u>193</u>	Do procedures ensure that NIST Certified (or equivalent) ambient pressure sensors maintained in the sampling area have a sufficient measurement range for the expected ambient barometric pressures and a resolution of 1 mm Hg or less? (Section B1-1a(44))					
<u>194</u>	Do procedures ensure that the NIST traceable (or equivalent) temperature sensor in the sampling location has a sufficient temperature range for the sampling location (-30 to 50°C)? (Section B1-1a(44))					
DIRECT CANISTER SAMPLING						

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>195</u>	<p>Are procedures, processes, and equipment in place to ensure that the following operating conditions are in place for direct canister sampling:</p> <ul style="list-style-type: none"> Canisters are evacuated to 0.1 mm Hg prior to use and attached to a changeable filter connected to the sampling head Sampling heads are capable of either punching through the metal lid of the drums while maintaining an airtight seal for sampling through the drum lid, penetrating a filter or the septum in the orifice of a self-tapping screw, or maintaining an airtight seal for sampling through a pipe overpack container filter vent hole. Field duplicates are collected in the same manner and at the same time as the original sample. Field blanks shall be samples of room air collected in the immediate vicinity of the waste drum sampling area prior to removal of the drum lid. Equipment blanks and field reference standards shall be collected using a purge assembly equivalent to the standard side of the manifold Less than 10 percent of the headspace is withdrawn when a headspace estimate is available (Note: The volume withdrawn is the canister volume and the internal volume of the sampling head) Each sample canister is equipped with a pressure/vacuum gauge capable of indicating leaks and sample collection volumes. The gauge shall be helium leak tested to 1.5×10^{-7} cc/s, have all stainless steel construction and be capable of tolerating temperatures to 125°C Summa® canisters or equivalent are used to collect samples <p>(Section B1-1a(25))</p>					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
	SAMPLING HEADS UNDER DRUM LIDS: SAMPLING THROUGH A CARBON FILTER					
196	<p>Are procedures, process, and equipment adequate to ensure that samples collected through a carbon filter meet the following requirements:</p> <ul style="list-style-type: none">• The lid of the drum's 90-mil poly liner shall contain a hole for venting to the drum• That non-vented drums are not sampled until an internal nonconformance report is prepared, submitted, and resolved in order to obtain a representative sample• The carbon filter shall be sealed to prevent outside air from entering the drum• The sampling head for collecting drum headspace gas shall consist of a side-port needle, a filter to prevent particle contamination of the sample, and an adapter to connect the needle and filter• The sampling head is cleaned or replaced after each use• The housing of the filter shall allow insertion of the sampling needle through the filter element or a sampling port with septum that bypasses the filter element into the drum headspace• The side port needle shall be used to reduce the potential for plugging• The purge assembly shall be modified for compatibility with the side port needle. <p>(Section B1-1a(36)(ii))</p>					
	SAMPLING HEADS UNDER DRUM LIDS: SAMPLING THROUGH THE DRUM LID					
197	<p>Are procedures in place to establish the criteria for sampling through the drum lid as opposed to sampling through a filter?</p> <p>(Section B1-1a(3)(ii))</p>					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
197a	If sampling through a pipe overpack container filter vent hole with an airtight device is used, are procedures in place to ensure that a sampling head with an airtight seal for sampling through a pipe overpack container filter vent hole are available? (Section B1-1a(44); B1-1a(25); B1-1c(5))					
197b	If sampling through a pipe overpack container filter vent hole is used, are the following criteria met? <ul style="list-style-type: none"> The seal between the pipe overpack container surface and sampling apparatus shall be designed to minimize intrusion of ambient air. The filter shall be replaced as quickly as is practicable with the airtight sampling apparatus to ensure that a representative sample can be taken. All components of the sampling system that come into contact with sample gases shall be cleaned according to requirements for direct canister sampling or manifold sampling, whichever is appropriate, prior to sample collection. Equipment blanks and field reference standards shall be collected through all the components of the sampling system that contact the headspace-gas sample. During sampling, openings in the pipe overpack container shall be sealed to prevent outside air from entering the container. A flow-indicating device shall be connected to sampling system and operated according to the direct canister or manifold sampling requirements, as appropriate. (Section B1-1a(36)(iii))					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>197c</u>	<p>If sampling through a pipe overpack container filter vent hole is used, are the following criteria met?</p> <ul style="list-style-type: none"> The site has documentation that demonstrates that they have determined through testing the appropriate length of time for exchanging the filter with the sampling device to assure representative samples are collected. The time for completing the exchange is incorporated into appropriate headspace gas sampling procedures. <p>(Section B1-1a(36)(iii))</p>					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
<u>198</u>	<p>Are procedures, process, and equipment adequate to ensure that samples collected through the drum lid meet the following requirements:</p> <ul style="list-style-type: none"> • The lid of the drum's 90-mil poly liner shall contain a hole for venting to the drum • Non-vented drums are not sampled until an internal nonconformance report is prepared, submitted, and resolved in order to obtain a representative sample • The drum lid shall be breached using a punch that forms an airtight seal between the drum lid and the manifold or canister • The seal between the drum lid and the sampling head shall be designed to minimize the intrusion of ambient air • All components of the drum punch sampling system that come in contact with sample gases shall be purged with humidified zero air, nitrogen, or helium prior to sample collection • Equipment blanks and field reference standards shall be collected through all components of the punch that contact the headspace gas sample • Pressure shall be applied to the punch until the drum lid has been breached • Provisions shall be made to relieve drum pressure increases during drum punch operations and during sealing of the drum punch to the drum lid • The filter is sealed to prevent ambient air from entering the drum (Section B1-1a(36)(i) and (ii)) 					

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	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
198a	<ul style="list-style-type: none"> A flow indicating device to verify excess flow of QC gases for system purge shall be pneumatically connected to the drum punch and operated in the same manner as the flow indicating device used in the manifold system Equipment are used to secure the drum punch sampling system to the drum lid If the headspace gas sample is not taken at the time of drum punching, the presence and diameter of the rigid liner vent hole is documented during the punching operation for use in determining an appropriate Scenario 2 DAC. <p>(Section B1-1a(26)(ii))</p>					

Radiography Checklist

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	QUALITY ASSURANCE OBJECTIVES					
<u>233</u>	<p>Are process procedures in place to meet the following Quality Assurance Objectives?:</p> <p><u>Precision</u></p> <ul style="list-style-type: none"> Did the site project QA Officer calculate and report the relative percent difference (RPD) between the vent hole diameter and the estimated waste material parameter (WMP) weights as determined by radiography, and these same parameters as determined by visual examination (VE)? Is the precision of radiography enough to demonstrate compliance with QAOs through identifying an image test pattern? <p><u>Accuracy</u></p> <ul style="list-style-type: none"> Was the accuracy with which the matrix parameter category waste matrix code and WMP weights can be determined documented through VE of a randomly selected statistical portion of waste containers? Was the percentage of waste containers which requires a new matrix parameter category waste matrix code or were found to contain prohibited items after VE calculated and reported by the site project QA officer as a measure of radiography accuracy? 					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
233a	<u>Completeness</u> <ul style="list-style-type: none"> Was an audio/videotape (or equivalent media) of the radiography examination and a radiography data form validated according to the requirements in Section B3.10? Was an audio/videotape (or equivalent media) of the radiography examination and a radiography data form obtained for 100% of the retrievably stored waste containers? <u>Comparability</u> <ul style="list-style-type: none"> Is comparability ensured through the use of standardized radiography procedures and operator training and qualifications (Section B3-4)					
CHARACTERIZATION AND SYSTEM REQUIREMENTS						
234	Does the site have procedures to ensure that radiography is used to determine waste packaging configuration, determine the presence and diameter of vent holes, determine the waste material parameter contents and estimate waste material parameter weights of retrievably stored waste? (Section B3-4) Does the site have procedures to identify prohibited materials, and to identify/confirm waste matrix code (physical form)? (Section B-3c)					
235	Do procedures or other supporting documentation ensure that <u>every</u> waste container will undergo radiography and/or VE? (Section B-3c)					
236	Do procedures ensure that containers with lead liners are examined by visual examination rather than by radiography? (Section B1-3a)					
237	Do procedures or other supporting documentation ensure that radiography results are compared with waste stream descriptions as per B-3c? If discrepancies are noted, will a new waste stream be identified? (Section B-3c)					

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	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<u>238</u>	Are there procedures to ensure the data obtained from an audio/videotaped scan provided by trained radiography operators? (Section B1-3b)					
<u>239</u>	Were all activities required to achieve the radiography objective described in site Quality Assurance Project Plans (QAPjPs) and Standard Operating Procedures (SOPs)? (Section B3-4)					
<u>240</u>	Did the radiography system consist of the following equipment or equivalent: <ul style="list-style-type: none">• an X-ray producing device?• an imaging system?• an enclosure for radiation protection?• a waste container handling system (including a turntable dolly assembly)?• an audio/video recording system or equivalent?• an operator control and data acquisition station? (Section B1-3a)					
<u>241</u>	Did the X-ray producing device have controls which allow the operator to vary voltage, thereby controlling image quality? Was it possible to vary the voltage, typically between 150-400 kV, to provide an optimum degree of penetration through the waste? Was high-density material examined with the X-ray device set on the maximum voltage? Was low-density material examined at lower voltage settings to improve contrast and image definition? (Section B1-3a)					
<u>242</u>	Do procedures or other documentation ensure that the audio/videotape or equivalent made of the waste container scan and maintained as a non-permanent record? (Section B1-3a)					
	DATA COMPILATION					
<u>243</u>	Are there procedures to ensure that a radiography data form is used to document the matrix parameter category waste matrix code, and and estimated WMP weights of the waste, and all information to determine and/or verify the sampling scenario, packaging configuration, and rigid liner vent hole presence and diameter for selecting the appropriate DAG? (Section B1-3a)					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<u>252</u>	<p>Does the documented training program contain the following:</p> <p><u>Formal Training</u></p> <ul style="list-style-type: none"> • Project Requirements • State and Federal Regulations • Basic Principles of Radiography • Radiographic Image Quality • Radiographic Scanning Techniques • Application Techniques • Radiography of Waste Forms • Standards, Codes, and Procedures for Radiography • Site-Specific Instruction <p><u>On-the-Job Training</u></p> <ul style="list-style-type: none"> • System Operation • Identification of Packaging Configurations • Identification of WMPs • Weight and Volume Estimation • Identification of Prohibited Items <p>(Section B1-3b)</p>					
<u>253</u>	Does the documented training program ensure that the radiography test drum include items common to the specific waste streams for which a Waste Stream Profile Form is sought? (Section B1-3b)					
<u>253a</u>	Does the documented training program ensure that the radiography test drum includes common waste packaging configurations and rigid liner vent hole diameters appropriate to the specific waste streams for which a waste stream profile form is sought? (Section B1-3b)					
<u>254</u>	Does the documented training program ensure that the test drums are divided into layers with varying packing densities or were different drums used to represent different situations that may occur during radiography examination at the site? (Section B1-3b)					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<u>255</u>	Does the documented training program ensure that test drums available that are representative of the waste matrix codes at the site and are representative test drums successfully examined prior to waste stream shipment? (Section B1-3b)					
<u>256</u>	Does the documented training program ensure that the radiography test drums include the following required elements: <ul style="list-style-type: none"> • Aerosol can with puncture? • Horsetail bag? • Pair of coveralls? • Empty bottle? • Irregular shaped pieces of wood? • Empty one gallon paint can? • Full container? • Aerosol can with fluid? • One gallon bottle with three tablespoons of fluid? • One gallon bottle with one cup of fluid (upside down)? • Leaded glove or leaded apron? • Wrench? (Section B1-3b)					
<u>257</u>	Does the documented training program ensure that the required elements of the test drum successfully identified by the operator as part of the qualification process and results documented? (Section B1-3b)					
<u>257a</u>	Does the documented training program ensure that the operator successfully determines and/or verifies the sampling scenario, packaging configuration and (if appropriate) rigid liner vent hole diameter in order to document the criteria for selecting the appropriate DAC? (Section B1-3b)					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<u>264</u>	For waste containers undergoing visual examination, does the testing report sheet for each waste container also identify the matrix parameter category waste matrix code waste material parameter weights as determined by visual examination and prohibited materials? (Section B3-10)					
	QUALITY ASSURANCE					
<u>265</u>	Does the documented training program ensure that the imaging system characteristics are verified on a routine basis? (Section B1-3b(2))					
<u>266</u>	Do procedures ensure that independent replicate scans and replicate observations of the video output of the radiography process are performed under uniform conditions and procedures? Are independent replicate scans performed on one waste container per day per testing batch of 20 samples , which ever is less frequent? Are independent observations of one scan (not the replicate scan) performed once per day per testing , which ever is less frequent, by a qualified radiography operator (other than the individual who performed the first examination)? (Section B1-3b(2))					
<u>267</u>	Do procedures ensure that oversight functions, including periodic audio/videotape (or equivalent media) reviews of accepted waste containers, are performed by qualified radiography personnel (other than the operator who dispositioned the waste container)? (Section B1-3b(2))					
<u>268</u>	Is the site project QA officer responsible for monitoring the quality of the radiography data and calling for corrective action, when necessary? (Section B1-3b(2))					
<u>269</u>	Do procedures ensure that as an additional QC check, the radiography results are verified directly by visual examination of the waste container contents of a statistically determined portion of waste containers? (Section B1-3b(3))					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<u>270</u>	Do procedures ensure that the matrix parameter category waste matrix code, and waste are material parameter weights, and information used to determine and/or verify the sampling scenario, packaging configuration, and rigid liner vent hole presence and diameter for selecting the appropriate DAG are verified through a comparison of radiography and visual examination results? (Section B1-3b(3))					
<u>271</u>	Do procedures ensure that the radiography operator have access to the visual examination results? (Section B1-3b(3))					
	EQUIPMENT TESTING AND MAINTENANCE					
<u>272</u>	Were all equipment tested and maintained in accordance with manufacturer instructions? (Section B3-4)					
<u>273</u>	Did the site QAPJP and SOPs document the specific manufacturer's requirements for testing and inspection? (Section B3-4)					
<u>274</u>	Is the radiography equipment calibrated and maintained in accordance with controls established and implemented in the site's QAPJP and SOPs, respectively? Do these procedures address performance criteria? (Section B3-4)					
<u>275</u>	When the radiography equipment is in use, are operational checks conducted at the beginning of each work shift? Do these checks include observation of a test pattern to ensure that the radiography system has adequate video quality? (Section B3-4)					
	DATA VALIDATION, REVIEW, VERIFICATION AND REPORTING					
<u>276</u>	Do procedures ensure that the generator data, all applicable requirements for data collection and management specified in B3-10, is achieved? With the exception of identifying items or conditions that could pose a hazard, the radiography results are not made available to visual examination personnel until after the visual examination is completed. (Section B3-10)					
<u>277</u>	Do procedures ensure that all applicable data generation review verification and validation activities specified in B3-10 are followed, including all signatory releases? (Section B3-10)					

Visual Examination (VE) Checklist

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
	CONFIRMATION OF RADIOGRAPHIC RESULTS					
<u>284</u>	As a QC check on radiography, do procedures or other documentation require that the site open and visually examine a statistical portion of the retrievably stored waste containers? (Section B1-3b(3))					
<u>285</u>	Do site procedures ensure that the site use the data from visual examination to check the waste packaging configuration, presence and diameter of rigid poly liner vent holes, Waste Matrix Code, absence of prohibited items, and waste material parameter weight estimates, as determined by radiography? (Section B1-3b(3))					
<u>286</u>	Do site procedures ensure that the site use the data obtained from the visual examination to determine the percentage of miscertified waste containers for each Summary Category Group as required in Section B2-1? (Section B1-3b(3))					
<u>287</u>	Do site procedures require that the site initially use a miscertification rate of 11% to calculate the number of waste containers that must be visually examined until a site-specific miscertification rate has been established? (Section B2-1)					
<u>288</u>	Do site procedures require the site specific miscertification rate be applied initially to each Summary Category Group? Is a Summary Category Group-specific miscertification rate determined after 6 months or 50% of the Summary Category Group has undergone radiographic characterization? Is the entire Summary Category Group subject to the re-evaluated Summary Category Group miscertification rate? (Section B2-1)					
<u>289</u>	Do site procedures require that the site-specific miscertification rate be reassessed annually by calculating a drum-weighted average of all historic Summary Category Group-specific miscertification rates? Do procedures ensure that sites use a miscertification rate of 1% for any site-specific or Summary Category Group-specific miscertification rate calculated to be less than 1%? (Section B2-1)					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<u>290</u>	Table B2-1 presents the number of waste containers requiring visual examination by miscertification rate and annual number of waste containers per Summary Category Group undergoing characterization. Do procedures ensure that the annual number of waste containers per Summary Category Group undergoing characterization are within the range used in the table (50 to 2000)? (Section B2-1)					
<u>291</u>	Do procedures ensure that waste containers are randomly selected and examined based on established visual examination procedures? Were only waste containers certified for compliance with WIPP-WAC and TRAMPAC selected? (Section B2-1)					
<u>292</u>	Do procedures ensure that once containers have been visually examined, the UCL_{90} for the proportion miscertified is calculated? (Section B2-1)					
<u>293</u>	Do procedures ensure that the site takes precautions to ensure that corrective actions taken after the containers were visually examined to improve certification accuracy were not used to adjust the visual examination results and the UCL_{90} ? (Section B3-13)					
<u>294</u>	Do procedures ensure that the facility use the hypergeometric distribution for the UCL_{90} calculation? The normal distribution is not allowed. If the binomial distribution was used, was N larger than 500 waste containers? (Section B2-1)					
<u>295</u>	Do procedures ensure that the results of the visual examination are forwarded to the radiography facility? (Section B1-3b(3))					
	TRAINING					
<u>296</u>	Is there documentation which shows that a standardized training program for visual examination personnel has been developed? Does it include both formal classroom and OJT? Is it specific to the site and include the various waste configurations generated/stored at the site? (Section B1-3b(3))					
<u>297</u>	Is there documentation which shows that the visual inspectors receive training on the specific waste generating processes, typical packaging configurations, and waste material parameters expected to be found in each matrix parameter category waste matrix code at the site?(Section B1-3b(3))					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<u>298</u>	Is there documentation which shows that the OJT and apprenticeship conducted by a qualified, experienced operator? Are the visual inspectors requalified once every two years?(Section B1-3b(3))					
<u>299</u>	Is the site specific training program based on the following elements: <u>Formal Training</u> - Project Requirements - State and Federal Regulations - Application Techniques - Site-Specific Instruction <u>On-the-Job Training</u> - Identification of Packaging Configurations - Identification of Waste Material Parameters - Weight and Volume Estimation - Identification of Prohibited Items (Section B1-3b(4),(5))					
<u>299a</u>	Does the documented training program ensure that the operator successfully determines and/or verifies the sampling scenario, packaging configuration and (if appropriate) rigid liner vent hole diameter in order to document the criteria for selecting the appropriate DAC? (Section B1-3b)					
	VISUAL EXAMINATION EXPERT REQUIREMENTS					
<u>300</u>	Does documentation ensure that the site has designated a visual examination expert? Has the visual examination expert completed all of the required training? Is the visual examination expert familiar with the waste generating processes that have taken place at the site? Is the visual examination expert familiar with all of the types of waste being characterized at that site? (Section B1-3b(5))					
<u>301</u>	Does documentation ensure that the visual examination expert responsible for the overall management and implementation of the visual examination aspects of the program? Does the site's QAPJP specify the selection, qualification, and training requirements of the visual examination expert? (Section B1-3b(5))					

	WAP Requirement ¹	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why)	Item Reviewed	Adequate? Y/N	
<u>302</u>	Do site documents indicate that the visual examination expert decided the extent of waste segregation within a container are necessary to achieve program objectives? (Section B1-3b(5)) Is the decision correct?					
<u>303</u>	Does the site's QAPJP specify decision-making criteria for the visual examination expert to follow when determining the appropriate degrees of segregation? Does the site have SOPs to support the visual examination process? How does the visual examination expert document the basis for his/her decision? (Section B1-3b(5))					
	VISUAL EXAMINATION PROCEDURES					
<u>304</u>	Do procedures indicate that visual examination is based on a semi-quantitative and/or qualitative evaluation of the waste container contents and that the examination recorded on audio/videotape or equivalent? (Section B1-3b(3))					
<u>305</u>	Do site procedures ensure that the visual inspector records the description of the waste container contents on a data form? Does the description clearly identify the appropriate matrix parameter categories waste matrix codes listed in the BIR? Is the information sufficient to estimate weights of waste material parameters? (Section B1-3b(3))					
<u>306</u>	Do site procedures ensure that when the bags are not opened, a brief written description of the contents of the bags is prepared to document the estimated amounts of each waste type in the bags, based upon the use of historically derived waste weight tables and an estimation of the waste volumes? (Section B1-3b(5))					
<u>307</u>	Do site procedures ensure that the written records of visual examination are supplemented with the audio/video recording or equivalent? (Section B1-3b(6))					
<u>308</u>	Does the site have a site-specific SOP for conducting visual examinations? (Section B1-3b(5))					
<u>309</u>	Do site documents include criteria for the visual examination expert to have in his/her decision-making criteria for assessing the need to open the bags/packages in order to identify all of their contents? (Section B1-3b(5))					

ATTACHMENT F

RCRA CONTINGENCY PLAN

Introduction

The WIPP facility is owned and co-operated by the Department of Energy (DOE) and co-operated by its designated Management and Operating Contractor (MOC) which is currently Westinghouse TRU Solutions LLC (Permit Condition I.D.3).

This Contingency Plan was prepared in accordance with the Resource Conservation and Recovery Act (RCRA) requirements codified in Title 20 of the New Mexico Administrative Code, Chapter 4.1.500 (20.4.1.500 NMAC, incorporating 40 CFR §264.50 to §264.56), "Contingency Plan and Emergency Procedures," and submitted in compliance with 20.4.1.900 NMAC (incorporating 40 CFR §270.14(b)(7)). The purpose of this document is to define responsibilities, to describe coordination of activities, and to minimize hazards to human health and the environment from fires, explosions, or any sudden or nonsudden release of hazardous waste, or hazardous waste constituents to air, soil, or surface water (20.4.1.500 NMAC (incorporating 40 CFR §264.51 [a])). This plan consists of descriptions of processes and emergency responses specific to hazardous substances, contact-handled (CH) transuranic (TRU) mixed waste and other hazardous waste handled at the WIPP facility. This permit does not authorize the disposal of remote-handled (RH) waste.

F-1 General Information

The WIPP facility is located 26 miles (mi) (42 kilometers [km]) east of Carlsbad, in Eddy County in southeastern New Mexico, and includes an area of 10,240 acres (ac) (4,144 hectares [ha]). The facility is located in an area of low-population density, with fewer than 30 permanent residents living within a 10 mi (16 km) radius of the facility. The area surrounding the facility is used primarily for grazing, potash mining, and mineral exploration. Resource development that would affect WIPP facility operations or the long-term integrity of the facility is not allowed within the 10,240 ac (4,144 ha) that have been set aside for the WIPP Project.

The WIPP facility is designed to receive containers of TRU waste, which will be transported to the WIPP facility from the ten major and other minor DOE TRU mixed waste generator and/or storage sites. The waste will be emplaced in the bedded salt of the Salado Formation, 2,150 feet (ft) (655 meters [m]) below ground surface.

As a geologic facility for the management of TRU mixed waste, the WIPP repository is regulated as a "miscellaneous unit," as defined under 20.4.1.500 NMAC (incorporating 40 CFR §264.601 to §264.603). The areas at the WIPP facility subject to RCRA permitting include the surface container storage areas in the Waste Handling Building Container Storage Unit (WHB

**TABLE F-6
EMERGENCY EQUIPMENT MAINTAINED
AT THE WASTE ISOLATION PILOT PLANT**

Equipment	Description and Capabilities	Location
Communications		
Building Fire Alarms	Manual pull stations and automatic devices (sprinkler system flow, and smoke and thermal detectors) trigger fire alarm; locally visible and audible; visual display and alarm in Central Monitoring Room (CMR)	Guard and Security Building, Pumphouse, Warehouse/Shops, Exhaust Filter Building, Support Building, CMR/ Computer Room, Waste Handling Building, TRUPACT Maintenance Facility, SH Hoisthouse, Maintenance Shops, Guard Shack*, Auxiliary Warehouse, Core Storage Building, Engineering Building, Training Facility, Safety Building, Maintenance Shop, Hazardous Waste Storage (non-TRU) Area (Facility 474) *local alarms; not connected to the CMR
Underground Fire Alarms	Automatic/Manual; have priority over other paging channel signals but not override intercom channels; alarms sound in the general area of the control panel and are connected to the underground evacuation alarms; they also interface with the CMR.	Fire detection and control panel locations: Waste Shaft Underground Station, SH Shaft Underground Station, Panel 4 (outside room 4) , Between E-140 and E-300 in S-2180 Drift, E-O/N-1200, Fuel Station
Site-wide Evacuation Alarm	Transmitted over paging channel of the public address system, overriding its normal use; manually initiated according to procedures requiring evacuation; audible alarm produced by tone generator at 10 decibels above ambient noise level (or at least 75 decibels); flashing strobe lights; radios and/or pagers are used to notify facility personnel outside alarm range. Monthly test are performed on the PA, site notification alarms, and pagers.	Site-wide
Vehicle Siren	Manual; oscillating; emergency services/surface response vehicles, is mechanical and electronic.	WIPP surface emergency vehicles
Public Address System	Includes intercom phones; handset stations and loudspeaker assemblies, each with own amplifiers; multichannel, one for public address and pages, and others for independent party lines.	Surface and underground
Intraplant Phones	Private automatic branch exchange; direct dial; provide communication link between surface and underground operations	Throughout surface and underground

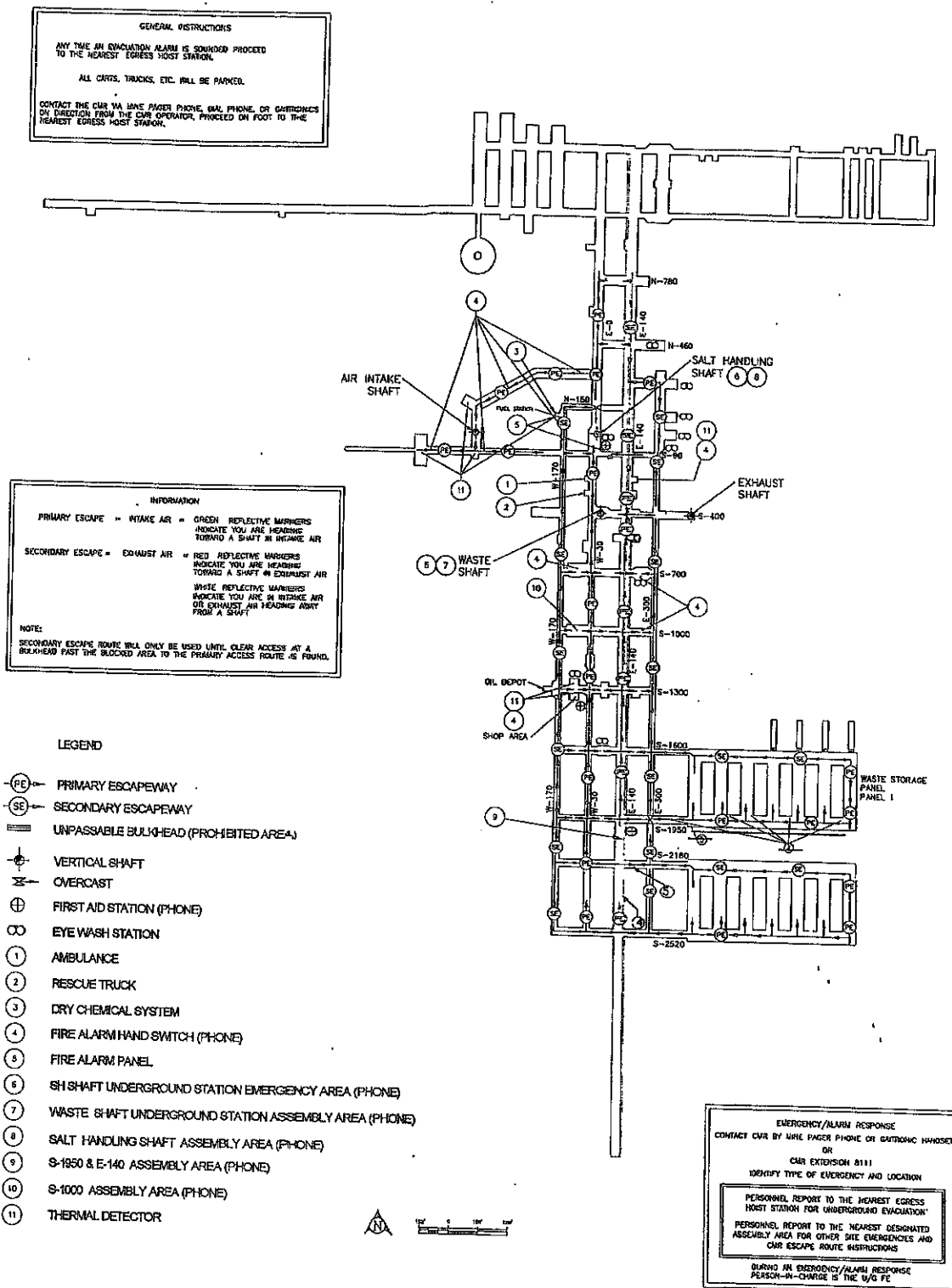


Figure F-5
Underground Emergency Equipment Locations and Underground Evacuation Routes

ATTACHMENT H

PERSONNEL TRAINING

Introduction

This chapter describes the personnel training program for the Waste Isolation Pilot Plant (WIPP) in accordance with the requirements of the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act as described in Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1 (20.4.1.500 NMAC), (incorporating 40 CFR §264.16), and 20.4.1.900 NMAC (incorporating 40 CFR §270.14).

The primary objective of the WIPP facility training program is to prepare personnel to operate the WIPP facility in a safe and environmentally sound manner. To achieve this objective, the program provides employees with training relevant to their positions. Every WIPP facility employee, including those not directly involved in transuranic (TRU) mixed waste handling activities, receives an introduction to the RCRA and emergency preparedness within 30 days of employment. In this way everyone at the WIPP facility is given, at a minimum, a basic understanding of the regulatory requirements and emergency procedures. Employees in hazardous waste management positions receive additional classroom and on-the-job training designed specifically to teach them how to perform their duties safely and in conformance with regulatory requirements. Hazardous waste management personnel receive the required training before being allowed to work unsupervised, and emergency response personnel receive appropriate training before being called upon to respond to actual emergencies.

The training requirements apply to all appropriate employees of the U.S. Department of Energy (DOE); the Management and Operating Contractor (MOC), Westinghouse TRU Solutions LLC; the Scientific Advisor, Sandia National Laboratories; and contractors who regularly work at the facility that may come in contact with and/or manage hazardous waste. The WIPP Project training program is comprehensive and applies to all areas of personnel performance and development. This chapter describes the introductory and continuing training provided to personnel at the WIPP facility, with emphasis on those facility personnel and their supervisors whose jobs are such that their actions or failure to act could result in a spill or release, or the immediate threat of a spill or release of hazardous waste. These personnel are directly involved with hazardous waste management at the WIPP facility. Their training allows them to operate the facility safely and in compliance with hazardous waste regulations.

H-1 Outline of the Training Program

Employee training for the purpose of hazardous waste management at the WIPP facility is the overall responsibility of the MOC General Manager, with responsibility for implementation delegated to the manager of the Human Resources Department. The Human Resources

- 1
2
3
4
5
6
- 7 4. Computer Security
8 ≈1 hour
9
10
11
12
13
- 14 5. Fire Protection
15 ≈1 hour
16
17
18
19
20
21
- 22 6. RCRA & Storm Water Management
23 ≈2 hours
24
25
26
27
28
29
30
31
32
33
34
35
- 36 8. Work Policies and Procedures
37
38 ≈1 hour
39
40
- c. Warning Tags
- d. WIPP safety hazards
- e. Medical assistance
- f. Actions to take for injuries
- g. Reporting injuries/accidents
- h. Employee concerns
- a. Department to contact
- b. WIPP policies and procedures for:
1. Personally owned software
2. Computer games
3. Passwords/password protection
- c. Computer virus prevention
- a. WIPP Fire Protection Program
- b. Fire sources at WIPP
- c. Fire Tetrahedron
- d. Classes of fires
- e. Fire extinguisher
- f. Office Warden Program
- g. Employee responsibilities during a fire
- a. RCRA history
- b. RCRA goals
- c. WIPP goals and relation to RCRA
- d. Definition of RCRA wastes
- e. Site generated waste program
- f. Training requirements for treatment storage and disposal facilities
- g. Contingency Plan
- h. Waste Minimization Program
- i. RCRA regulatory agencies
- j. RCRA enforcement options
- k. Application of Storm Water Management policy in relation to the general employee
- a. DOE Orders and ~~Westinghouse~~ ~~TRU Solutions~~ MOC Procedures
- b. Teamwork
- c. Conduct of Operations Policy

COURSE: SAF-630/631 - Respiratory Protection

DURATION: ≈8 hours

PREREQUISITES: Medical physical

TYPE: Classroom and Practical

SCOPE: This program contains the requirements of respiratory protection as outlined in 29 CFR 1910.134, 10 CFR 20, ANSI, Z88.2-1980 and applicable WIPP procedures.

OBJECTIVE: Upon completion of this course the trainee will demonstrate a knowledge of the WIPP respiratory protection program; respiratory health hazards; and types of respiratory protection devices, their proper use and limitations.

Mastery of the terminal objective will be demonstrated by scoring 80% or higher on a closed book lesson examination.

COURSE DESCRIPTION (by lesson)

1. Introduction

≈2 hours

A. Basic Requirements

- a. Regulations
- b. DOE Orders
- c. Industry Standards
- d. ~~Westinghouse TRU Solutions~~
- e. WIPP Procedures
 - 1. Physical exam
 - 2. Pulmonary test
 - 3. Training
 - 4. Fit Testing
 - 5. Identification of potential respirator activities
 - 6. Selection of Respirators
 - 7. Respirator usage, storage and sanitation

1-1d(1) Schedule for Panel Closure

The anticipated schedule for the closure of each of the underground HWDUs known as Panels 4 2 through 8 is shown in Figure I-2. This schedule assumes there will be little contamination within the exhaust drift of the panel. The following assumptions are made in estimating the time that closure will be initiated at each underground HWDU: waste operations are assumed to begin in July 1998 for planning purposes; throughput for CH waste is 784 drums per week (7 pallets per day, 4 days per week, 28 drums per pallet); and the capacity of a panel is 81,000 drums. Under these assumptions, a minimum of 104 weeks is needed to emplace the waste. Allowing a 25 percent contingency for maintenance delays and time to transition from one room to another, it is estimated that a panel will be filled 2.5 years after emplacement is initiated. This means that underground HWDUs will be ready for closure according to the schedule in Table I-1. These dates are estimates for planning and permitting purposes. Actual dates may vary depending on the availability of waste from the generator sites. Waste availability at maximum throughput is not anticipated immediately as assumed here.

In the schedule in Figure I-2, notification of intent to close occurs thirty (30) days before placing the final waste in a panel. Once a panel is full, the Permittees will initially block ventilation through the panel as described in Permit Attachment M2 and then will assess the closure area for ground conditions and contamination so that a definitive schedule and closure design can be determined. If as the result of this assessment the Permittees determine that a panel closure cannot be emplaced in accordance with the schedule in this Closure Plan, a modification will be submitted requesting an extension to the time for closure.

The Permittees will initially block ventilation through Panel 1 as described in Permit Attachment M2 once Panel 1 is full to ensure continued protection of human health and the environment. The Permittees will then install the explosion isolation wall portion of the panel closure system that is described in Permit Attachment I1, Section 3.3.2, Explosion-and Construction-Isolation Walls. Construction of the explosion isolation wall will not exceed 180 days after the last receipt of waste in Panel 1. Final closure of Panel 1 will be completed as specified in this Permit no later than five years after completion of the explosion isolation wall.

1-1d(2) Schedule for Final Facility Closure

The Disposal Phase for the WIPP facility is expected to require a period of twenty-five (25) years beginning with the first receipt of TRU waste at the WIPP facility and followed by a period ranging from seven to ten (7-10) years for decontamination, decommissioning, and final closure. Assuming the first waste receipt occurs in July 1998, the Disposal Phase may extend until 2023, and so the latest expected year of final closure of the WIPP facility (i.e., date of final closure certification) would be 2033. If, as is currently projected, the WIPP facility is dismantled at closure, all surface and subsurface facilities (except the hot cell portion of the WHB, which will remain as an artifact of the Permanent Marker System [PMS]) will be disassembled and either salvaged or disposed in accordance with applicable standards. In addition, asphalt and crushed caliche that was used for paving will be removed, and the area will be recontoured and

TABLE I-1
ANTICIPATED EARLIEST CLOSURE DATES FOR
THE UNDERGROUND HWDUs

HWDU	OPERATIONS START	OPERATIONS END	CLOSURE START	CLOSURE END
PANEL 1	3/99	4/02-2/03	2/02-3/03	6/02-9/03 SEE NOTE 5
PANEL 2	1/02	7/04	8/04	12/05
PANEL 3	7/04	1/07	2/07	6/07
PANEL 4	1/07	7/09	8/09	12/10
PANEL 5	7/09	1/12	2/12	6/12
PANEL 6	1/12	7/14	8/14	12/15
PANEL 7	7/14	1/17	2/17	6/17
PANEL 8	1/17	7/19	8/19	12/20
PANEL 9	7/19	1/22	2/22	SEE NOTE 4
PANEL 10	1/22	7/24	8/24	SEE NOTE 4

NOTE 1: Only Panels 1 to 3 will be closed under the permit covered by this application. Closure schedules for Panels 4 through 10 are projected assuming new permits will be issued in 2009 and 2019.

NOTE 2: The point of closure start is defined as sixty (60) days following notification to the NMED of closure.

NOTE 3: The point of closure end is defined as one hundred eighty (180) days following placement of final waste in the panel.

NOTE 4: The time to close these areas may be extended depending on the nature and extent of the disturbed rock zone. The excavations that constitute these panels will have been opened for as many as forty (40) years so that the preparation for closure may take longer than the time allotted in Figure I-2. If this extension is needed, it will be requested as an amendment to the Closure Plan.

NOTE 5: The anticipated closure end date for Panel 1 is for installation of the 12-foot explosion isolation wall. Final closure of Panel 1 will be completed as specified in this Permit no later than five years after completion of the explosion isolation wall.

List of Abbreviations/Acronyms

ACI	American Concrete Institute
AISC	American Institute for Steel Construction
*CFR	Code of Federal Regulations
cm	centimeter
°C	degrees celsius
°F	degrees Fahrenheit
DOE	U.S. Department of Energy
DRZ	disturbed rock zone
EEP	Excavation Effects Program
ESC	expansive salt-saturated concrete
FLAC	Fast Lagrangian Analysis of Continua
ft	foot (feet)
GPR	ground-penetrating radar
Kips	1,000 pounds
m	meter(s)
MB 139	Marker Bed 139
<u>MOC</u>	<u>Management and Operating Contractor (Permit Condition I.D.3)</u>
MPa	megapascal(s)
MSHA	Mine Safety and Health Administration
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NaCl	sodium chloride
NMVP	no-migration variance petition
psi	pound(s) per square inch
RCRA	Resource Conservation and Recovery Act
SMC	Salado Mass Concrete
TRU	transuranic
VOC	volatile organic compound(s)
Westinghouse	Westinghouse TRU Solutions LLC
WIPP	Waste Isolation Pilot Plant

ATTACHMENT I1

DETAILED DESIGN REPORT FOR AN OPERATION PHASE PANEL CLOSURE SYSTEM

Executive Summary

Scope. Under contract to ~~Westinghouse TRU Solutions LLC~~ the Management and Operating Contractor (~~Westinghouse MOC~~), IT Corporation has prepared a detailed design of a panel-closure system for the Waste Isolation Pilot Plant (**WIPP**). Preparation of this detailed design of an operational-phase closure system is required to support a Resource Conservation and Recovery Act (**RCRA**) Part B permit application. This report describes the detailed design for a panel-closure system specific to the WIPP site. The recommended panel-closure system will adequately isolate the waste-emplacement panels for at least 35 years.

The report was modified to make it a part of the RCRA Permit issued by the New Mexico Environment Department. The primary change required in the original report was to specify that Panel Closure Design Options A, B, C and E are not approved as part of the facility Permit. Option D is the most robust of the original group of options, and it was specified in the Permit as the design to be constructed for all panel closures. The concrete to be used for panel closures is salt-saturated Salado Mass Concrete as specified in Permit Attachment I1, Appendix G, instead of the proposed plain concrete. The Permittees may submit proposals to modify the Permit (Module II), the Closure Plan (Permit Attachment I) and this Appendix (identified as Permit Attachment I1) in the future, as specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.42).

Other changes included in this version of the report revised for the permit are minor edits to regulatory citations, deletion of references to the No Migration Variance Petition (no longer required under 40 CFR 268.6), and movement of all figures to the end of the document. Appendices A through F in the original document are not included in this Permit Attachment. Although those Appendices were important in demonstrating that the panel closures will meet the performance standards in the hazardous waste regulations, they do not provide design details or plans to be implemented as Permit requirements. References to these original Appendices were modified to indicate that they were part of the permit application, but are not included in the Permit. In contrast, Appendix G (Technical Specifications) and Appendix H (Design Drawings) are necessary components of future activities and are retained as parts of this Permit Attachment.

Purpose. This report provides detailed design and material engineering specifications for the construction, emplacement, and interface-grouting associated with a panel-closure system at the WIPP repository, which would ensure that an effective panel-closure system is in place for

1	DRZ	Disturbed rock zone
2	EPA	U.S. Environmental Protection Agency
3	MB 139	Marker Bed 139
4	MSHA	U.S. Mine Safety and Health Administration
5	NMAC	New Mexico Administrative Code
6	NMED	New Mexico Environment Department
7	MOC	Management and Operating Contractor, Westinghouse TRU Solutions, LLC
8		(Permit Condition I.D.3)
9	RCRA	Resource Conservation and Recovery Act
10	SMC	Salado Mass Concrete
11	USACE	U.S. Army Corps of Engineers
12	Westinghouse	Westinghouse TRU Solutions LLC
13	WID	Waste Isolation Division
14	WIPP	Waste Isolation Pilot Plant

15 **1.4 List of Drawings**

16 The following drawings are made apart of this specification:

17	762447-E1	Panel closure system, air intake and exhaust drifts, title sheet
18	762447-E2	Panel closure system, underground waste-emplacement panel plan
19	762447-E3	Panel closure system, air intake drift, construction details
20	762447-E4	Panel closure system, air exhaust drift, construction details
21	762447-E5	Panel closure system, construction and explosion walls, construction details
22	762447-E6	Panel closure system, air intake and exhaust drifts, grouting and miscellaneous
23		details

24 **1.5 Work by Others**

25 Survey

26 All survey work to locate the barriers and walls, control and confirm excavation, and complete
27 the work will be supplied by the Permittees. All survey measurements for record purposes will
28 also be performed/supplied by the Permittees. The Contractor shall be responsible for verifying
29 the excavation dimensions to develop the form work to fit the excavation.

30 Excavation

31 The Permittees may elect to perform certain portions of the work, notably the excavation. The
32 work performed by the Permittees will be defined prior to the contract.

33 **1.6 Contractor's Use of Site**

34 Site Conditions

35 The site is located near Carlsbad, New Mexico, as shown on the site location maps and the title
36 sheet drawing. The underground arrangements and location of the WIPP waste-emplacement

Chain of Custody Record

{MOC Name and Address}

C of C Control No. _____

RFA Control No. _____

SAMPLING PROGRAM _____ LAB DESTINATION _____

SAMPLE TEAM MEMBERS _____ CARRIER/WAYBILL NO. _____

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.

Special Instructions _____

Possible Sample Hazards: _____

Signatures: (Name, Company, Date and Time): _____

1. Relinquished By: _____
Received By: _____

3. Relinquished By: _____
Received By: _____

2. Relinquished By: _____
Received By: _____

4. Relinquished By: _____
Received By: _____

WHITE - Original, to accompany samples YELLOW - Field Copy PINK - OTHER

Figure L-17a
Example Chain-of-Custody Record

REQUEST FOR ANALYSIS

{MOC Name and Address}

VOC Monitoring Program _____

Purchase Order No. _____

R/A Control _____

C/C Control No. _____

Date Sample Shipped _____

Lab Destination _____

Laboratory Contact _____

Send Lab Report To _____

Date Report Required _____

Project Contact _____

Project Contact Phone No. _____

Serial No.	Sample No.	C-of-C No.	Sample Type	Sample Pressure	Preservative	Contract-Specific Testing	Special Instructions

TURNAROUND TIME REQUIRED: (Rush must be approved by appropriate Manager) NORMAL _____ RUSH _____ (Subject to rush surcharge)
 POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or contain high levels of hazardous substances.)
 NONHAZARD _____ FLAMMABLE _____ SKIN IRRITANT _____ HIGHLY TOXIC _____ BIOLOGICAL _____ OTHER _____

SAMPLE DISPOSAL (Please indicate disposition of sample following analysis.) RETURN TO CLIENT _____ DISPOSAL BY LAB _____ (Please Specify)

FOR LAB USE ONLY

RECEIVED BY _____ DATE/TIME _____

Figure L-17b
Example Request for Analysis

PERMIT ATTACHMENT L
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Acronyms and Abbreviations

BFB	4-Bromofluorobenzene
BS/BSD	blank spike/blank spike duplicate
CH	Contact-handled
CLP	Contract Laboratory Program
COC	concentration of concern
CRQL	contract-required quantitation limit
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ft	feet
FTIR	Fourier transform infrared spectrometry
g/mol	grams per mole
GC/MS	gas chromatography/mass spectrometry
HWDU	Hazardous Waste Disposal Unit
LCS	laboratory control sample
m	meter
MDL	method detection limit
MOC	Management and Operating Contractor, Westinghouse TRU Solutions LLC (Permit Condition I.D.3)
MRL	method reporting limit
NIST	National Institute of Standards and Testing
NMAC	New Mexico Administrative Code
ppbv	parts per billion by volume
QA	quality assurance
QAPD	Quality Assurance Program Description
QAPjP	Quality Assurance Project Plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
SOP	standard operating procedure

NM4890139088

RCRA PART A APPLICATION CERTIFICATION

The U.S. Department of Energy (DOE), through its Carlsbad Field Office, has signed as "owner and operator," and ~~Westinghouse~~ Washington TRU Solutions LLC, the Management and Operating Contractor (MOC), has signed this application for the permitted facility as "co-operator."

The DOE has determined that dual signatures best reflect the actual apportionment of Resource Conservation and Recovery Act (RCRA) responsibilities as follows:

The DOE's RCRA responsibilities are for policy, programmatic directives, funding and scheduling decisions, Waste Isolation Pilot Plant (WIPP) requirements of DOE generator sites, auditing, and oversight of all other parties engaged in work at the WIPP, as well as general oversight.

The MOC's RCRA responsibilities are for certain day-to-day operations (in accordance with general directions given by the DOE and in the Management and Operating Contract as part of its general oversight responsibility), including, but not limited to, the following: certain waste handling, monitoring, record keeping, certain data collection, reporting, technical advice, and contingency planning.

For purposes of the certification required by Title 20 of the New Mexico Administrative Code, Chapter 4, Part 1 (20.4.1 NMAC), Subpart IX, §270.11(d), the DOE's and the MOC's representatives certify, under penalty of law that this document and all attachments were prepared under their direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on their inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of their knowledge and belief, true, accurate, and complete for their respective areas of responsibility. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner and Operator Signature: Original signed by Inés Triay

Title: Manager, Carlsbad Field Office

for: U.S. Department of Energy

Date: 6/26/01-1/13/03

Co-Operator Signature: Original signed by John L. Lee Steven D. Warren

Title: General Manager-President

for: Westinghouse Washington TRU Solutions LLC

Date: 6/18/01-1/16/03

I. MODULE I - GENERAL PERMIT CONDITIONS

I.A. EFFECT OF PERMIT

The Secretary of the New Mexico Environment Department (**Secretary**) issues this Permit to the United States Department of Energy (**DOE**), the owner and co-operator of the Waste Isolation Pilot Plant (**WIPP**) (EPA I.D. Number NM4890139088), and ~~Westinghouse~~ Washington TRU Solutions LLC, Management and Operating Contractor (**MOC**), the co-operator of WIPP. This Permit authorizes DOE and MOC (**the Permittees**) to manage, store, and dispose contact-handled transuranic (**TRU**) mixed waste at WIPP, and establishes the general and specific standards for these activities, pursuant to the New Mexico Hazardous Waste Act (**HWA**), NMSA 1978, §§74-4-1 et. seq. (Repl. Pamph. 1993) and the New Mexico Hazardous Waste Regulations, 20.4.1.100 NMAC et. seq.

Compliance with this Permit during its term shall constitute compliance, for purposes of enforcement, with Subtitle C of the Resource Conservation and Recovery Act (**RCRA**), 42 U.S.C. §6901 et. seq., and/or the HWA, and/or their implementing regulations. Compliance with this Permit shall not constitute a defense to any order issued or any action brought under Sections 74-4-10.E or 74-4-13 of the HWA; Sections 3008(a), 3008(h), 3013, or 7003 of RCRA; the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. §9601 et seq., commonly known as CERCLA) Sections 106(a), 104, or 107; or any other law providing for protection of public health or the environment. This Permit does not convey any property rights of any sort or any exclusive privilege, nor authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local laws or regulations. [20.4.1.900 NMAC (incorporating 40 CFR §§270.4 and 270.30(g))]

I.B. PERMIT ACTIONS

I.B.1. Permit Modification, Suspension, and Revocation

This Permit may be modified, suspended, and/or revoked for cause as specified in Section 74-4-4.2 of the HWA and 20.4.1.900 NMAC (incorporating 40 CFR §§270.41, 270.42, and 270.43). The filing of a request by the Permittees for a permit modification, suspension, or revocation, or the notification of planned changes or anticipated noncompliance, shall not stay any permit condition. [20.4.1.900 NMAC (incorporating 40 CFR §270.30(f))]

I.B.2. Permit Renewal

The Permittees may renew this Permit by submitting an application for a new Permit at least one hundred eighty (180) calendar days before the expiration date of this Permit. In reviewing any application for a Permit renewal, the Secretary shall consider improvements in the state

I.D.3. Permittees

"Permittees" means the United States Department of Energy (DOE), an agency of the Federal government, and the owner and co-operator of the WIPP facility; and ~~Westinghouse~~ Washington TRU Solutions LLC, Management and Operating Contractor (MOC), the co-operator of the WIPP facility.

I.D.4. Secretary

"Secretary" means the Secretary of the New Mexico Environment Department (NMED), or designee.

I.D.5. TRU Waste

"TRU Waste" means waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for (A) high-level radioactive waste; (B) waste that the DOE Secretary has determined, with the concurrence of the EPA Administrator, does not need the degree of isolation required by the disposal regulations; or (C) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with part 61 of title 10, Code of Federal Regulations. [Pub. L. 102-579 (1992)]

I.D.6. TRU Mixed Waste

"TRU Mixed Waste" means TRU waste that is also a hazardous waste as defined by the HWA and 20.4.1.200 NMAC (incorporating 40 CFR §261.3).

I.D.7. Contact Handled Packages

"Contact Handled Packages" means both TRUPACT-II and HalfPACT shipping containers and their contents.

I.E. DUTIES AND REQUIREMENTS

I.E.1. Duty to Comply

The Permittees shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized in an emergency permit specified in 20.4.1.900 NMAC (incorporating 40 CFR §270.61). Any Permit noncompliance, except under the terms of an emergency permit, constitutes a violation of RCRA and/or HWA and is grounds for enforcement action; for Permit modification, suspension, or revocation; or for denial of a Permit modification or renewal application. [20.4.1.900 NMAC (incorporating 40 CFR §270.30(a))]